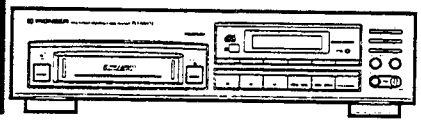
PIONEER®
The Art of Entertainment

Service Manual



ORDER NO.
ARP2694

MULTI-PLAY COMPACT DISC PLAYER

PD-M602
PD-M552
PD-M502

PD-M602, PD-M552 AND PD-M502 HAVE THE FOLLOWING:

Type	Model			Power Requirement	Remarks
	PD-M602	PD-M552	PD-M502		
KU	○	○	○	AC120V only	
KUXJ	○	○	○	AC120V only	
KUXJS	○	○	○	AC120V only	
KC	○	–	○	AC120V only	
KCXJ	○	–	○	AC120V only	

- **This manual is applicable to the following : PD-M602/KU, KUXJ, KUXJS, KC and KCXJ ; PD-M552/KU, KUXJ, and KUXJS ; PD-M502/KU, KUXJ, KUXJS, KC and KCXJ.**
- **For the following : PD-M602/KUXJ, KUXJS, KC and KCXJ ; PD-M552/KU, KUXJ, and KUXJS ; PD-M502/KU, KUXJ, KUXJS, KC and KCXJ, refer to page 38.**

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1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).
When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

NOTICE
(FOR CANADIAN MODEL ONLY)
Fuse symbols -▮▭- (fast operating fuse) and/or -▮▭- (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE
(POUR MODÈLE CANADIEN SEULEMENT)
Les symboles de fusible -▮▭- (fusible de type rapide) et/ou -▮▭- (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

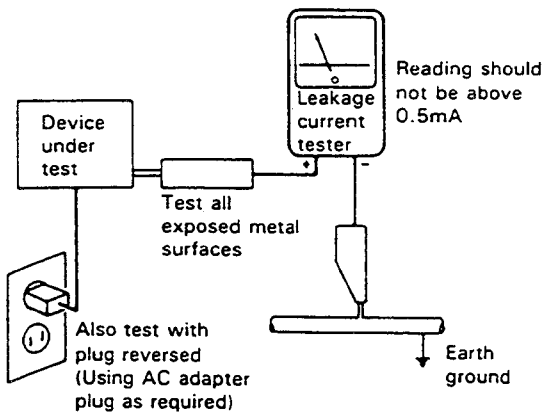
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.


Reading should not be above 0.5mA
Leakage current tester
Device under test
Test all exposed metal surfaces
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

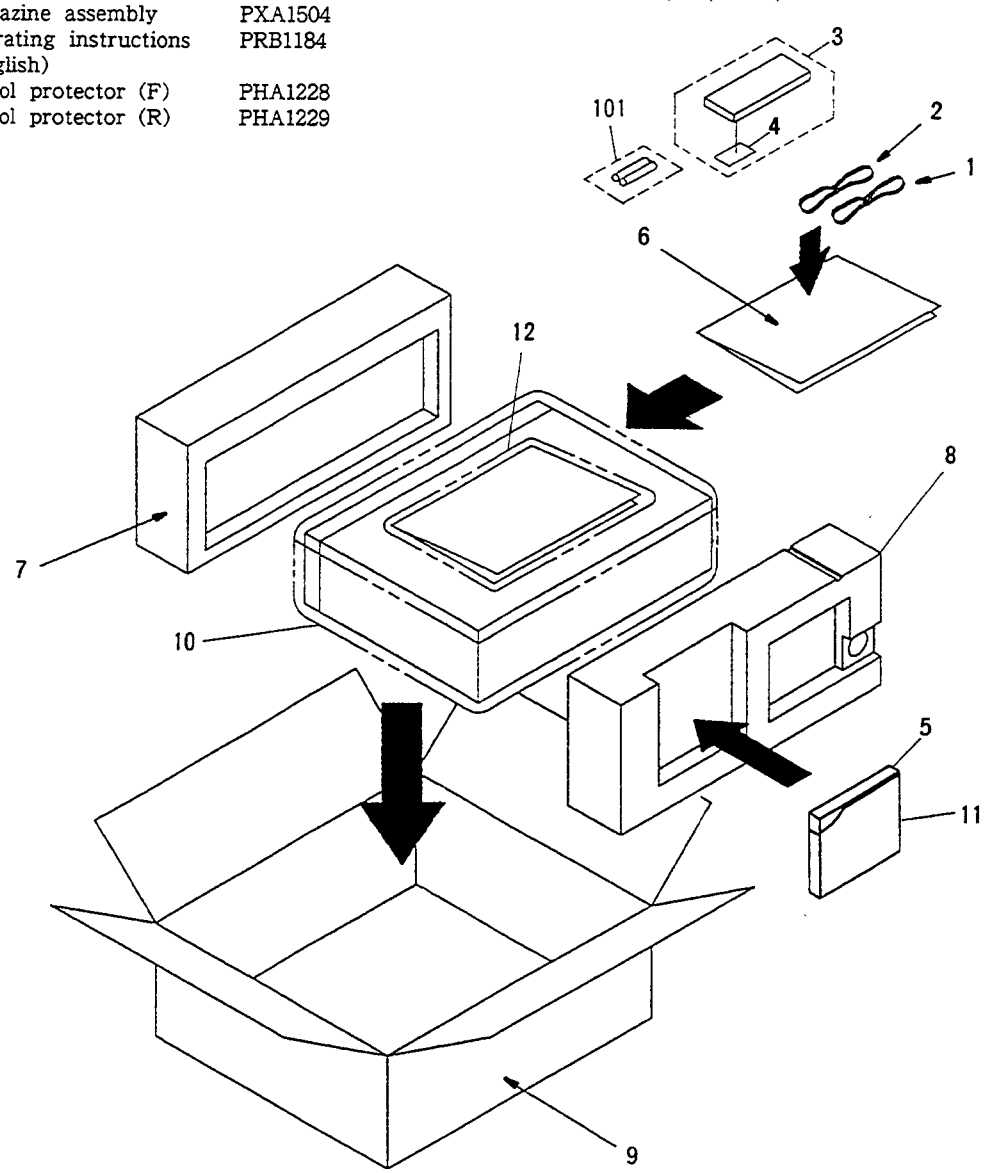
2. PACKING AND PARTS LIST

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Parts List

Mark	No.	Description	Part No.
	1	Connection cord with mini plug (for SR cord)	PDE – 319
	2	Connection cord with pin plug (for Audio)	PDE1109
	3	Remote control unit	PWW1068
	4	Battery cover	PZN1010
	5	Magazine assembly	PXA1504
	6	Operating instructions (English)	PRB1184
	7	Styrol protector (F)	PHA1228
	8	Styrol protector (R)	PHA1229
	9	CD packing case	PHG1869
	10	Mirror mat sheet	Z23 – 007
	11	PP case	PYY1169
	12	Bag	Z21 – 038
NSP	101	Dry cell battery (R03, AAA)	VEM – 022



3. EXPLODED VIEWS AND PARTS LIST

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

3.1 EXTERIOR

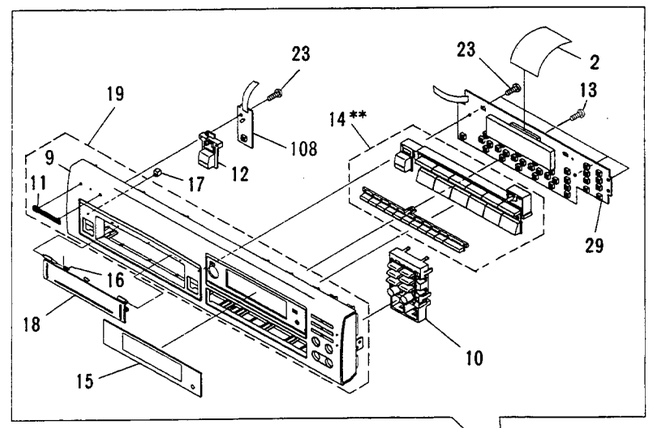
Parts List

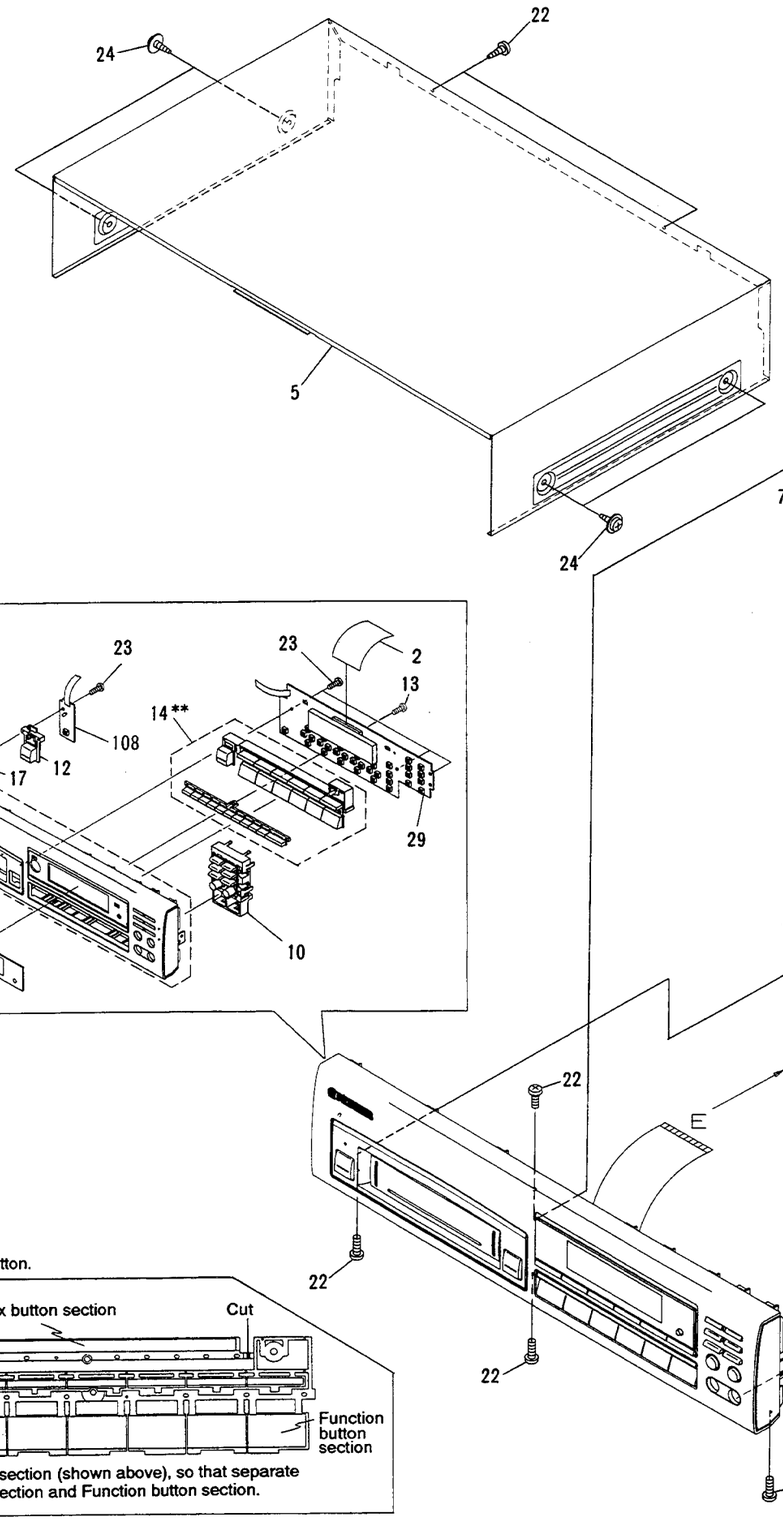
Mark	No.	Description	Part No.
⚠	1	Strain relief	CM – 22C
	2	32P F.F.C/30V	PDD1125
⚠	3	Power transformer	PTT1237
⚠	4	Power cord with plug	PDG1015
	5	Bonnet	PYY1149
	6	Insulator	PNW1912
	7	Screw	IBZ30P080FCC
	8	Knob (Headphone)	PAC1707
	9	Function panel	PNW2250
	10	Mode button	PAC1709
	11	Name plate	PAM1608
	12	Power button	PAC1719
	13	Screw	BBZ26P120FZK
	14	Function button	PAC1717
	15	Display window	PAM1607
	16	Spring (Door)	PBH1022
	17	LED lens	PNW2019
	18	Door	PNW2264
	19	Function panel assembly	PEA1265
	20	Mother board assembly	PWM1746
	21	Screw	BBZ30P060FMC
	22	Screw	BBZ30P080FZK
	23	Screw	PPZ30P120FMC
	24	Screw	FBT40P080FZK
	25	Screw	IBZ30P060FCC
	26	Screw	IBZ30P100FCC
	27	Screw	IBZ30P180FMC
	28	Screw	PDZ30P050FMC
	29	Function board assembly	PWZ2516

Mark	No.	Description	Part No.
NSP	101	PCB mould	AMR1525
NSP	102	Under base	PNA1751
NSP	103	Rear base	PNA1915
NSP	104	Multi mechanism assembly	PXA1469
NSP	105	Flat cable (6P)	D20PYY0615E
NSP	106	Earth lead unit	XDF – 502
	107	.....	
NSP	108	Switch board assembly	PWZ2520
NSP	109	Headphone board assembly	PWZ2524

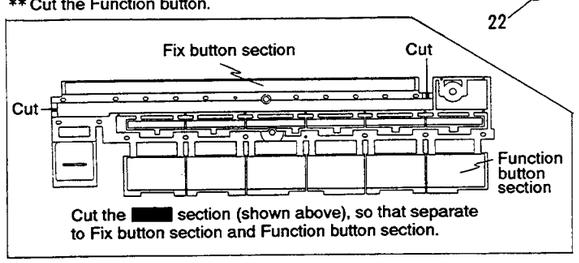
Exterior

NOTE: **Screws adjacent to ▼ mark on the product are used for disassembly.**

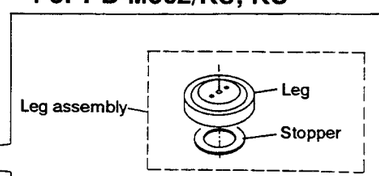




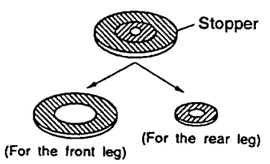
** Cut the Function button.


Fix button section
Cut
Cut
Function button section
Cut the ■ section (shown above), so that separate to Fix button section and Function button section.

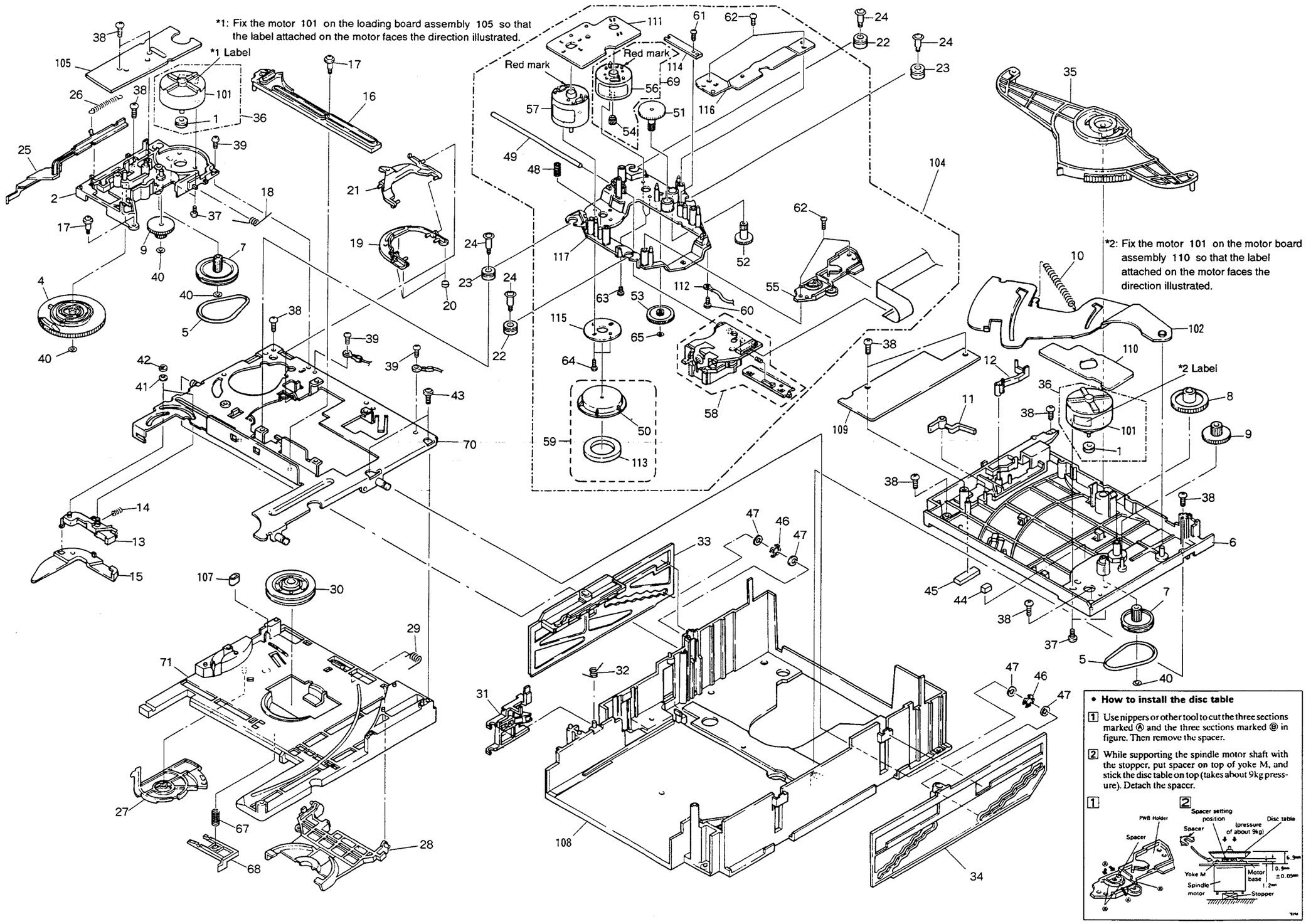
* For PD-M502/KU, KC



- The stopper consist of the big ring part and the small ring part. If you stick the stopper to the leg, stick the big ring part to the front leg, and the small ring part to the rear leg.



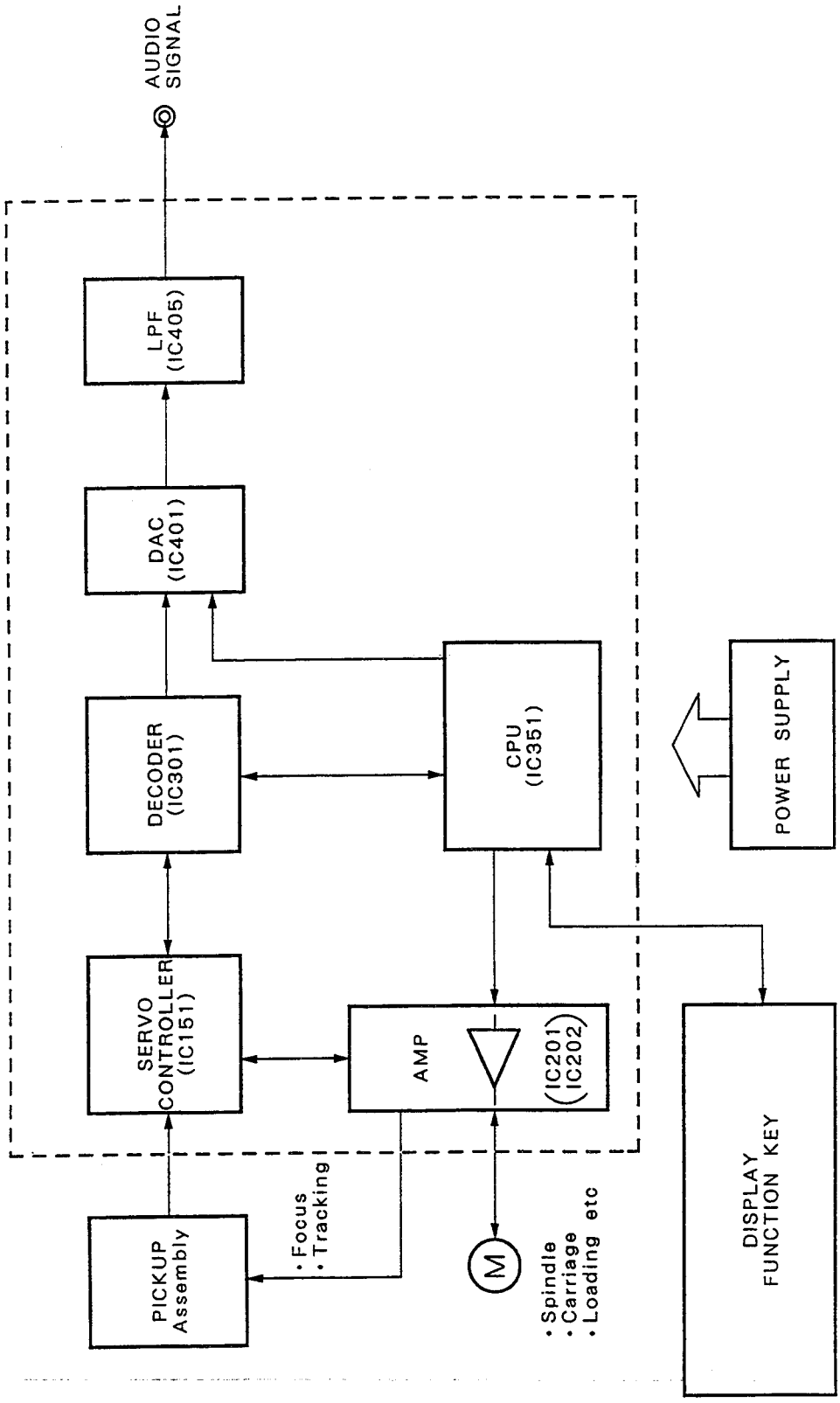
3.2 MULTI MECHANISM ASSEMBLY


*1: Fix the motor 101 on the loading board assembly 105 so that the label attached on the motor faces the direction illustrated.
*1 Label
Red mark
Red mark
*2: Fix the motor 101 on the motor board assembly 110 so that the label attached on the motor faces the direction illustrated.
*2 Label
• How to install the disc table
1 Use nippers or other tool to cut the three sections marked Ⓐ and the three sections marked Ⓑ in figure. Then remove the spacer.
2 While supporting the spindle motor shaft with the stopper, put spacer on top of yoke M, and stick the disc table on top (takes about 9kg pressure). Detach the spacer.
1
2
Spacer setting position
PWB Holder
Spacer
Spacer
(pressure of about 9kg)
Disc table
Yoke M
Motor base
Spindle motor
Stopper
6.9mm
0.9mm ±0.05mm
1.2mm

Parts List

Mark	No.	Description	Part No.
	1	Motor pulley	PNW1634
	2	Gear holder	PNW1929
	3	• • • • •	
	4	Cam gear	PNW1923
	5	Belt	PEB1138
	6	Top guide	PNW2061
	7	Gear pulley	PNW1918
	8	Gear S	PNW1919
	9	Gear L	PNW1920
	10	Eject spring	PBH1107
	11	Switch lever	PNW1927
	12	Seven bar	PNW1931
	13	Sub rotary lever	PNW1933
	14	Sub rotary lever spring	PBH1111
	15	Rotary lever	PNW1932
	16	Drive plate	PNW1930
	17	Motor screw	PBA-112
	18	Holder lever spring	PBH1110
	19	Disc holder	PNW1924
	20	Cushion A	PED1001
	21	Holder lever	PNW1925
	22	Float rubber	PEB1014
	23	Float rubber	PEB1132
	24	Float screw	PBA1073
	25	Release lever	PNW1934
	26	Release spring	PBH1106
	27	Clamper cam	PNW1922
	28	Clamper holder	PNW1921
	29	Clamper spring	PBH1109
	30	Clamper	PNW1857
	31	Lock lever	PNW1917
	32	Lock spring	PBH1108
	33	Stair L	PNW1915
	34	Stair R	PNW1916
	35	Synchronize lever	PNW1926
	36	Motor assembly (LOADING, DISC SELECT)	PEA1130
	37	Screw	PMZ26P040FMC
	38	Screw	PPZ30P080FMC
	39	Screw	BBZ30P060FMC
	40	Washer	WT26D047D025
	41	Washer	WA31D054D025
	42	E ring	Z39-010
	43	Screw	IPZ30P080FMC
	44	Rubber spacer	PEB1238
	45	Rubber spacer	PEB1179
	46	Silent ring	PBK1093
	47	Washer	WA62D130D025
	48	Earth spring	PBH1132
	49	Guide bar	PLA1094
	50	Disc table	PNW1067
	51	Gear 1	PNW2052
	52	Gear 2	PNW2053
	53	Gear 3	PNW2054
	54	Pinion gear	PNW2055
	55	PWB holder	PNW2057
	56	Carriage DC motor / 0.3W	PXM1027
	57	D.C. motor assembly (spindle, with oil)	PEA1235
	58	Pickup assembly	PEA1285
	59	Disc table assembly	PEA1035
	60	Screw	BBZ26P060FMC
	61	Screw	BPZ20P060FMC
	62	Screw	BPZ26P100FMC
	63	Screw	JFZ17P025FZK
	64	Screw	JFZ20P040FMC
	65	Washer	WT12D032D025
	66	• • • • •	
	67	Stopper spring	PBH1131
	68	Stopper	PNW2069
	69	D.C. motor assembly (CARRIAGE)	PEA1246
	70	Upper chassis	PNB1267
	71	Sub chassis	PNW2073
NSP	101	Motor	VXM1033
NSP	102	Eject lever	PNB1306
	103	• • • • •	
NSP	104	Servo mechanism assembly M	PXA1417
NSP	105	Loading board assembly	PWZ2038
	106	• • • • •	
NSP	107	Rubber tube	PEB1171
NSP	108	Main chassis	PNW2074
NSP	109	Select board assembly	PWZ2533
NSP	110	Motor board assembly	PWZ2040
NSP	111	Mechanism board assembly	PWX1192
NSP	112	Earth lead unit	PDF1074
NSP	113	Clamp magnet	PMF1014
NSP	114	Gear stopper	PNB1303
NSP	115	Yoke M	PNB1312
NSP	116	AV angle	PNB1405
NSP	117	Carriage base	PNW2058

4. BLOCK DIAGRAM



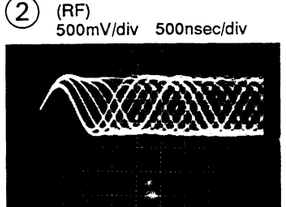
5. SCHEMATIC DIAGRAM

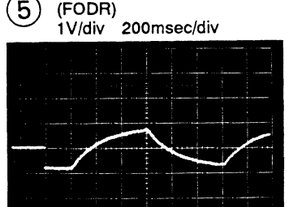
5.1 Waveforms

Note: The encircled numbers denote measuring points in the schematic diagram.

*1 50T-JUMP: After switching to the pause mode, press the manual search key.

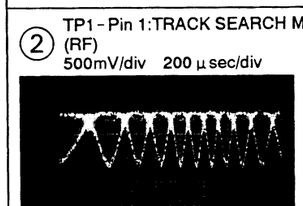
*2 FOCUS-IN: Press the key without loading a disc.

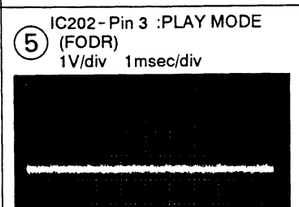
② TP1-Pin 1:PLAY MODE (RF)
500mV/div 500nsec/div

– GND

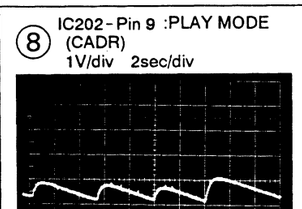
⑤ IC202-Pin 3 :FOCUS-IN (*2) MODE (FODR)
1V/div 200msec/div

– GND

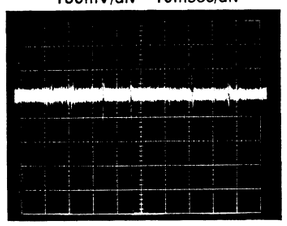
⑦ IC201-Pin 9:TRACK SEARCH MODE (SPDR)
2V/div 50msec/div

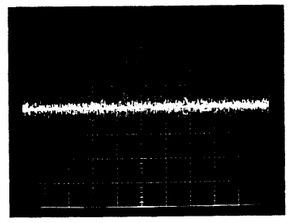
– GND

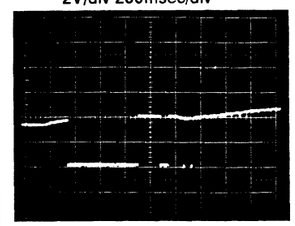
② TP1-Pin 1:TRACK SEARCH MODE (RF)
500mV/div 200 μsec/div

– GND

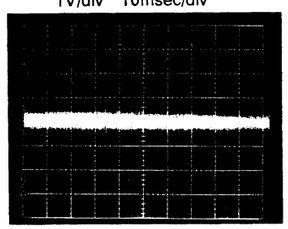
⑤ IC202-Pin 3 :PLAY MODE (FODR)
1V/div 1msec/div

– GND

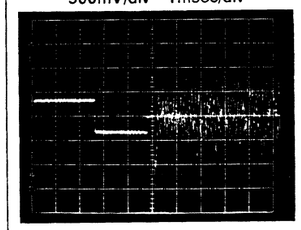
⑧ IC202-Pin 9 :PLAY MODE (CADR)
1V/div 2sec/div

– GND

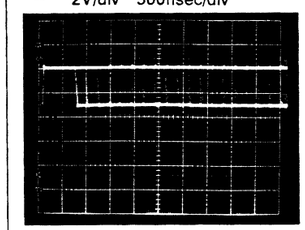
③ TP1-Pin 6:PLAY MODE (FOER)
100mV/div 10msec/div

– GND

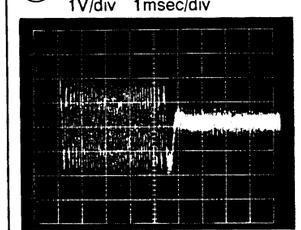
⑥ IC202-Pin 4:PLAY MODE (TRDR)
500mV/div 1msec/div

– GND

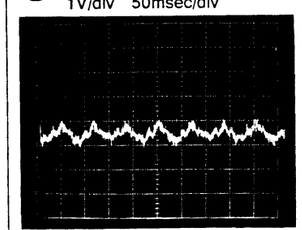
⑧ IC202-Pin 9 :TRACK SEARCH MODE (CADR)
2V/div 200msec/div

– GND

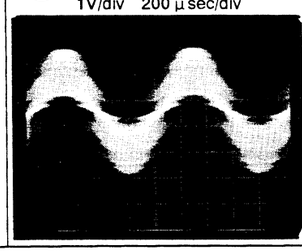
④ TP1-Pin 2:PLAY MODE (TRER)
1V/div 10msec/div

– GND

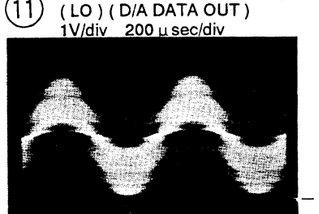
⑥ IC202-Pin 4:50T-JUMP (*1) MODE (TRDR)
500mV/div 1msec/div

– GND

⑨ IC151-Pin 32:PLAY MODE (EFM)
2V/div 500nsec/div

– GND

④ TP1-Pin 2:50T-JUMP (*1) MODE (TRER)
1V/div 1msec/div

– GND

⑦ IC201-Pin 9:PLAY MODE (SPDR)
1V/div 50msec/div

– GND

⑩ IC401-Pin 9:PLAY MODE (1kHz) ($\overline{LO}$) (D/A DATA OUT)
1V/div 200 μsec/div

– GND

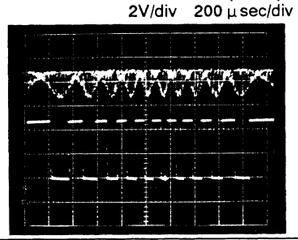
⑪ IC401-Pin 10:PLAY MODE (1kHz) (LO) (D/A DATA OUT)
1V/div 200 μsec/div

– GND

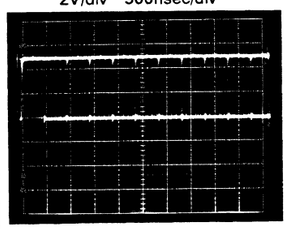
⑯ IC301-Pin 35:PLAY MODE (1kHz) (BCLK)
2V/div 500nsec/div

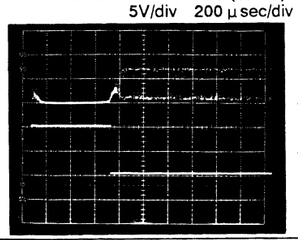
– GND

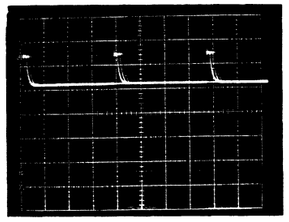
⑱ IC301-Pin 32:PLAY MODE (1kHz) (LRCK)
2V/div 10 μsec/div

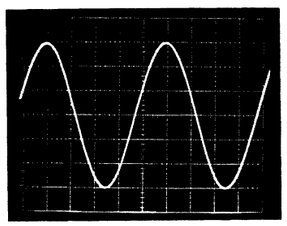
– GND

㉓ :TRACK SEARCH MODE
Upper:TP1-Pin 1 (RF) 1V/div
Lower:IC151-Pin 29 (MIRR)
2V/div 200 μsec/div

– GND
– GND

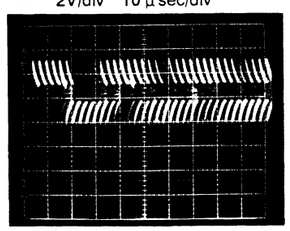
⑲ IC301-Pin 34:PLAY MODE (1kHz) (DATA)
2V/div 500nsec/div

– GND

㉔ :PLAY MODE
Upper:TP1-Pin 1 (RF) 1V/div
Lower:IC151-Pin 30 (DFCT)
5V/div 200 μsec/div

– GND
– GND

㉝ IC301-Pin 4:PLAY MODE (MDP)
2V/div 2 μsec/div

– GND

㉑ Pin-OUTPUT:PLAY MODE(1kHz)
1V/div 200 μsec/div

– GND

㉕

㊸ IC301-Pin 20:PLAY MODE (PCO)
2V/div 10 μsec/div

– GND

Note:

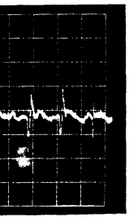
1. When or "PARTS PARTS L
2. Since the values of ment.
3. RESISTOR Unit: k:kΩ Rated pov noted. Tolerance: less other
4. CAPACITO Unit: p:pF Ratings: c Rated volt
5. COILS: Unit: m:m
6. VOLTAGE : DC ⇦ mA or
7. OTHERS:
   - ➡ : Sig
   - ⎚ : Adj
   - ▼ (Red)
   - The : m portanc placing.
8. SWITCHE

FUNCTIO
S702
S703
S704
S705
S706
S708
S721
S722
S723
S724
S725
S726
S727
S728
S729
S730
S731
S732
S733
S734
S735
S736
SWITCH
S801

e pause mode, press the

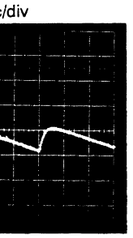
t loading a disc.

TRACK SEARCH MODE
ec/div



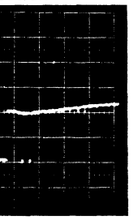
– GND

:PLAY MODE
/div



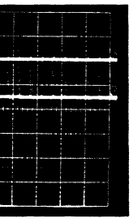
– GND

:TRACK SEARCH MODE
sec/div



– GND

2:PLAY MODE
nsec/div



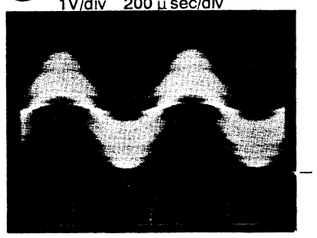
– GND

9:PLAY MODE (1kHz)
DATA OUT)
µsec/div

– GND

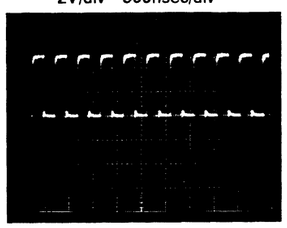
11

⑪ IC401 - Pin 10:PLAY MODE (1kHz)
(LO) (D/A DATA OUT)
1V/div 200 µsec/div



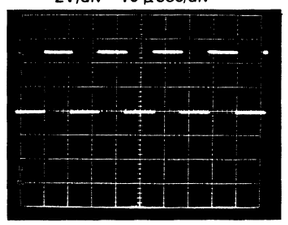
– GND

⑯ IC301 - Pin 35:PLAY MODE (1kHz)
(BCLK)
2V/div 500nsec/div



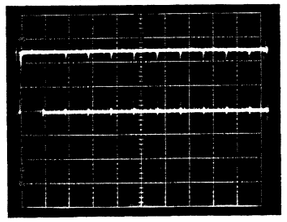
– GND

⑱ IC301 - Pin 32:PLAY MODE (1kHz)
(LRCK)
2V/div 10 µsec/div



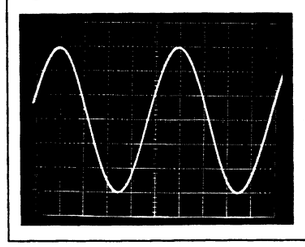
– GND

⑲ IC301 - Pin 34:PLAY MODE (1kHz)
(DATA)
2V/div 500nsec/div



– GND

㉑ Pin - OUTPUT:PLAY MODE(1kHz)
1V/div 200 µsec/div

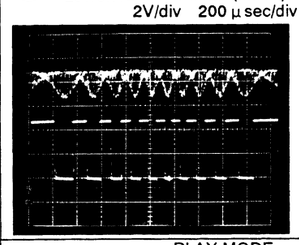


– GND

㉒

㉒

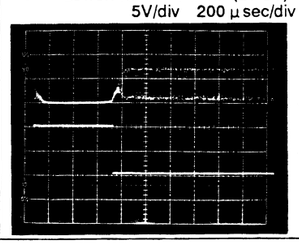
㉓ :TRACK SEARCH MODE
Upper:TP1 - Pin 1 (RF) 1V/div
Lower:IC151 - Pin 29 (MIRR)
2V/div 200 µsec/div



– GND

– GND

㉔ :PLAY MODE
Upper:TP1 - Pin 1 (RF) 1V/div
Lower:IC151 - Pin 30 (DFCT)
5V/div 200 µsec/div



– GND

– GND

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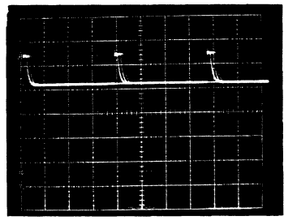
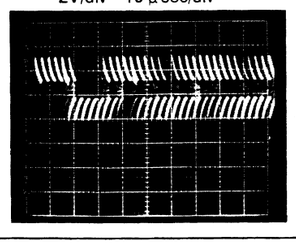
㉘

㉝ IC301 - Pin 4:PLAY MODE
(MDP)
2V/div 2 µsec/div



– GND

㊸ IC301 - Pin 20:PLAY MODE
(PCO)
2V/div 10 µsec/div



– GND

12

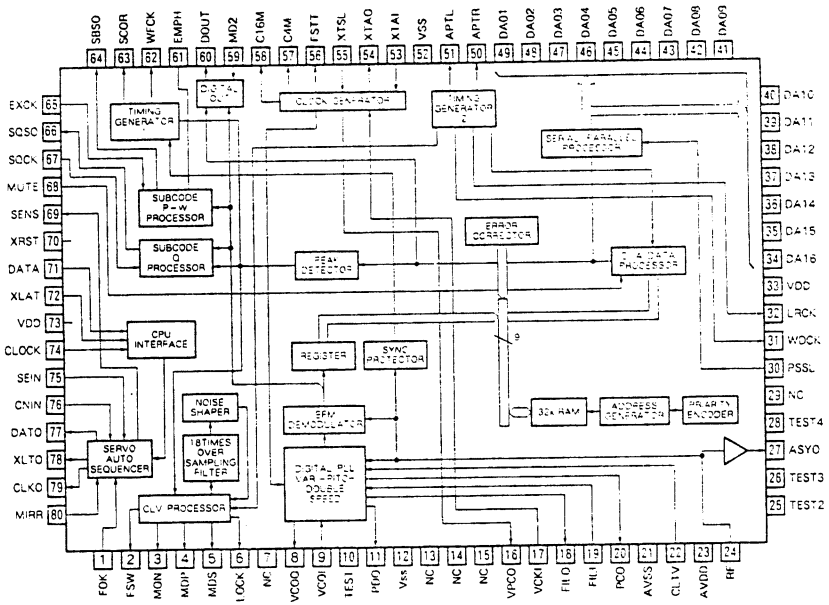
Note: (Type 4)

1. **When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".**
2. **Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.**
3. **RESISTORS:**
   Unit: k:kΩ, M:MΩ, or Ω unless otherwise noted.
   Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
   Tolerance: (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% or ±5% unless otherwise noted.
4. **CAPACITORS:**
   Unit: p:pF or µF unless otherwise noted.
   Ratings: capacitor (µF)/ voltage (V) unless otherwise noted.
   Rated voltage: 50V except for electrolytic capacitors.
5. **COILS:**
   Unit: m:mH or µH unless otherwise noted.
6. **VOLTAGE AND CURRENT:**
   ▭ : DC voltage (V) in PLAY mode unless otherwise noted.
   ⇨ mA or ⇦ mA: DC current in PLAY mode unless otherwise noted.
   Value in ( ) is DC current in STOP mode.
7. **OTHERS:**
   - ➡ : Signal route.
   - ⎚ : Adjusting point.
   - ▼ (Red) : Measurement point.
   - The ⚠ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.
8. **SWITCHES** (Underline indicates switch position):

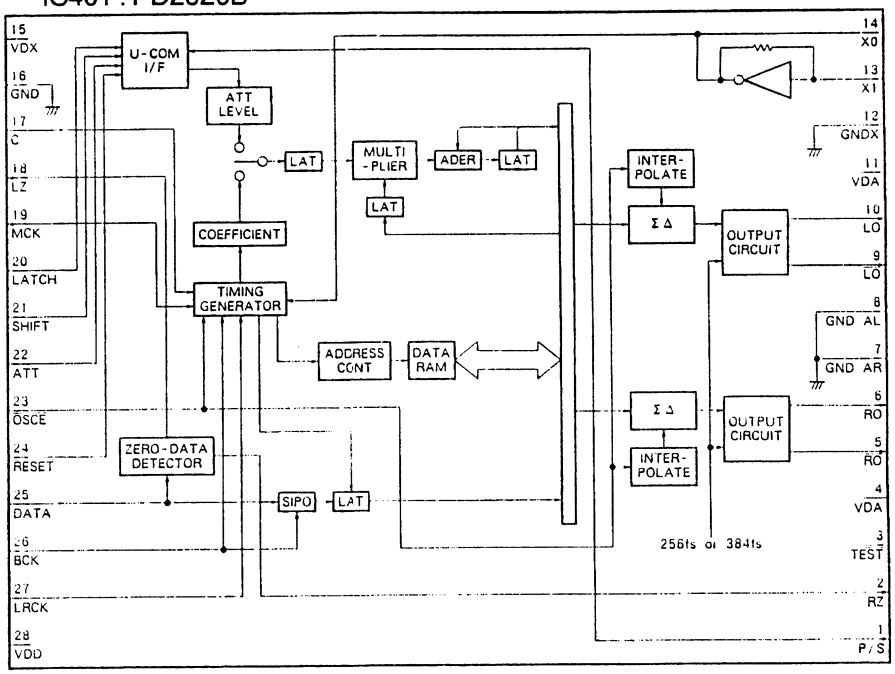
FUNCTION BOARD ASSEMBLY
S702 : EJECT ▲
S703 : DISC 2
S704 : DISC 1
S705 : AUTO FADER
S706 : DELETE
S708 : PROGRAM
S721 : COMPU TIME FADE
S722 : HI – LITE
S723 : DISC 3
S724 : DISC 4
S725 : ADLC
S726 : MUSIC TYPE
S727 : DISC 5
S728 : DISC 6
S729 : PAUSE
S730 : REPEAT
S731 : STOP
S732 : TIME
S733 : PLAY ▶
S734 : RANDOM
S735 : ⏮ ◀◀
S736 : ▶▶ ⏭
SWITCH BOARD ASSEMBLY
S801 : POWER

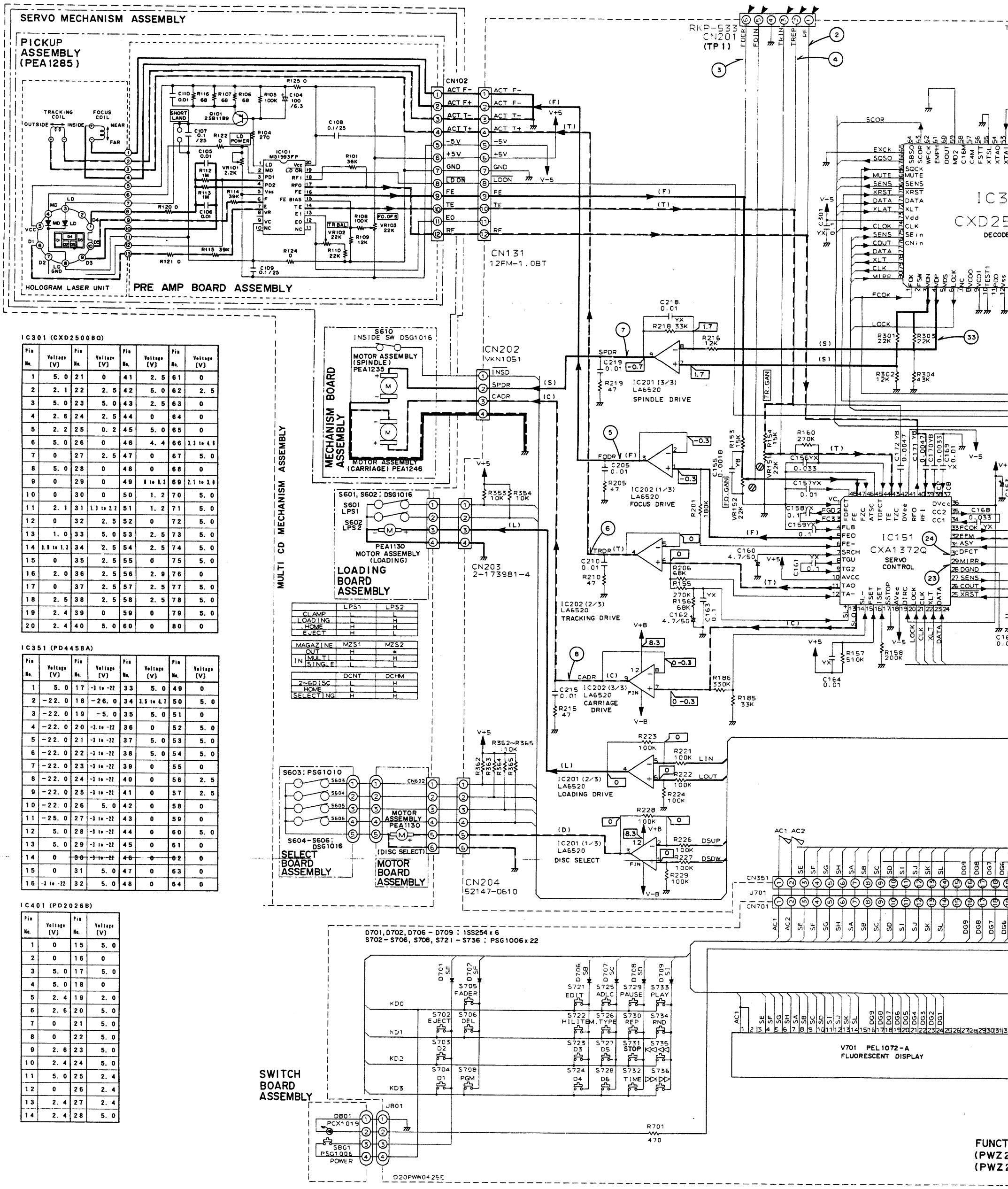
13

IC301 : CXD2500BQ



IC401 : PD2026B





IC301 (CXD2500BQ)

Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	5.0	21	0	41	2.5	61	0
2	2.1	22	2.5	42	5.0	62	2.5
3	5.0	23	5.0	43	2.5	63	0
4	2.6	24	2.5	44	0	64	0
5	2.2	25	0.2	45	5.0	65	0
6	5.0	26	0	46	4.4	66	3.3 to 4.6
7	0	27	2.5	47	0	67	5.0
8	5.0	28	0	48	0	68	0
9	0	29	0	49	0 to 0.3	69	2.1 to 3.0
10	0	30	0	50	1.2	70	5.0
11	2.1	31	1.3 to 2.2	51	1.2	71	5.0
12	0	32	2.5	52	0	72	5.0
13	1.0	33	5.0	53	2.5	73	5.0
14	0.9 to 1.3	34	2.5	54	2.5	74	5.0
15	0	35	2.5	55	0	75	5.0
16	2.0	36	2.5	56	2.9	76	0
17	0	37	2.5	57	2.5	77	5.0
18	2.5	38	2.5	58	2.5	78	5.0
19	2.4	39	0	59	0	79	5.0
20	2.4	40	5.0	60	0	80	0

IC351 (PD4458A)

Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	5.0	17	-3 to -22	33	5.0	49	0
2	-22.0	18	-26.0	34	3.5 to 4.7	50	5.0
3	-22.0	19	-5.0	35	5.0	51	0
4	-22.0	20	-3 to -22	36	0	52	5.0
5	-22.0	21	-3 to -22	37	5.0	53	5.0
6	-22.0	22	-3 to -22	38	5.0	54	5.0
7	-22.0	23	-3 to -22	39	0	55	0
8	-22.0	24	-3 to -22	40	0	56	2.5
9	-22.0	25	-3 to -22	41	0	57	2.5
10	-22.0	26	5.0	42	0	58	0
11	-25.0	27	-3 to -22	43	0	59	0
12	5.0	28	-3 to -22	44	0	60	5.0
13	5.0	29	-3 to -22	45	0	61	0
14	0	30	-3 to -22	46	0	62	0
15	0	31	5.0	47	0	63	0
16	-3 to -22	32	5.0	48	0	64	0

IC401 (PD2026B)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0	15	5.0
2	0	16	0
3	5.0	17	5.0
4	5.0	18	0
5	2.4	19	2.0
6	2.6	20	5.0
7	0	21	5.0
8	0	22	5.0
9	2.6	23	5.0
10	2.4	24	5.0
11	5.0	25	2.4
12	0	26	2.4
13	2.4	27	2.4
14	2.4	28	5.0

	LPS1	LPS2
CLAMP	L	L
LOADING	L	L
HOME	H	H
EJECT	H	L

	MZS1	MZS2
MAGAZINE OUT	H	*
MAGAZINE IN MULTI	L	H
MAGAZINE IN SINGLE	L	L

	DCNT	DCHM
2~6DISC HOME	L	H
SELECTING	H	H

⚠ MOTHER BOARD ASSEMBLY
(PWM1746 : PD-M602)
(PWM1745 : PD-M552)
(PWM1741 : PD-M502)

*1

	IC405	C433,C434	R445,R446	R447,R448
PD-M602	NJM4565-D	PCH1107	470Ω	470Ω
PD-M502 PD-M552	NJM4558-D	22/25	1kΩ	JUMPER

IC301
CXD2500BQ
DECODER

IC401
PD2026B
D/A CONVERTER

IC351
PD4458A
SYSTEM CONTROL

Q322 : INVERTER BUFFER

Q405 : MUTE DRIVER

Q391 : INVERTER BUFFER

IC405(1/2)(2/2) : LOW-PASS FILTER

Q403,Q404 : MUTE

JA401 (1/2) PKB1009 LINEOUT JACK

JA401 (2/2) PKB1009

IC406 (1/2) BA15218

IC406 (2/2) BA15218

JA501 RKN1002

HEADPHONE BOARD ASSEMBLY

PD-M602 ONLY

JA393 PKN1005 DECK SYNCHRO JACK

JA392 PKN1004 OUT

SR JACK

JA391 PKN1004 IN

IC21: SYSTEM RESET & +5V REGULATOR
IC21 PQ05RR12

IC22: -5V REGULATOR
IC22 NJM79L05

AC POWER CORD AC120V 60Hz
(KU:RDG1002)
(KC:RDG1010)

POWER TRANSFORMER PTT1237

REMOTE SENSOR SBX1610-51
PD-M602, PD-M552 ONLY

FUNCTION BOARD ASSEMBLY
(PWZ2516 : PD-M602, PD-M552)
(PWZ2514 : PD-M502)

D391

	D391
PD-M602 PD-M552	USED
~~PD-M502~~	~~NOT~~ USE

IC151 (CXA1372Q)

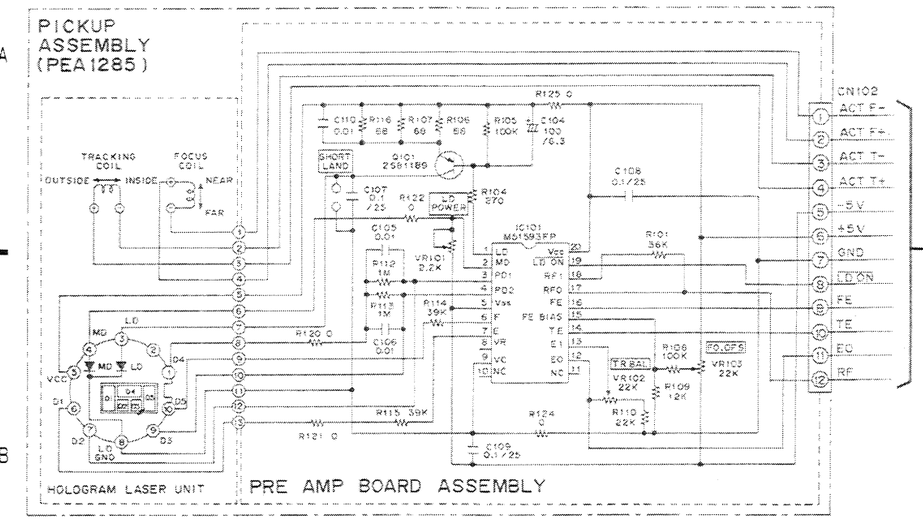
Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0	25	5.0
2	0	26	0
3	0	27	5.0
4	0	28	0
5	−0.3	29	0
6	0	30	−5.0
7	0.2	31	2.5
8	0	32	2.5
9	0	33	5.0
10	5.0	34	−1.5
11	0	35	−1.7
12	0	36	5.0
13	0	37	−0.7
14	0 to 4.1	38	−1.6
15	0	39	0
16	−4.0	40	0.8
17	1.3	41	−5.0
18	0	42	0
19	−5.0	43	0
20	5.0	44	0
21	5.0	45	0
22	5.0	46	0
23	5.0	47	0
24	5.0	48	0

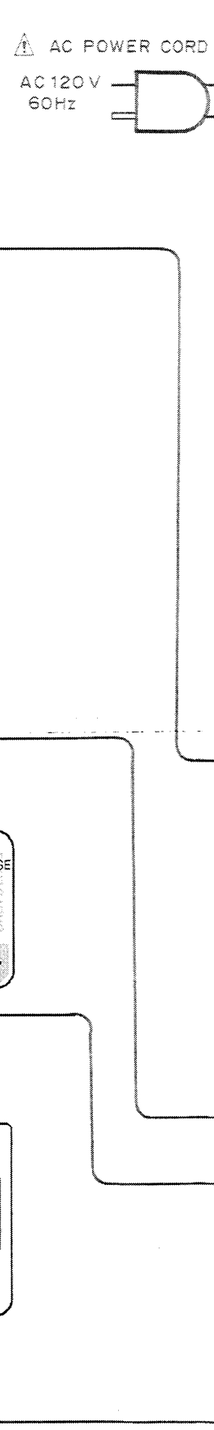
	CN351	CN701	J701
PD-M602 PD-M552	HLEM32S-1	HLEM32R-1	PDD1125
PD-M502	HLEM30S-1	HLEM30R-1	PDD1126

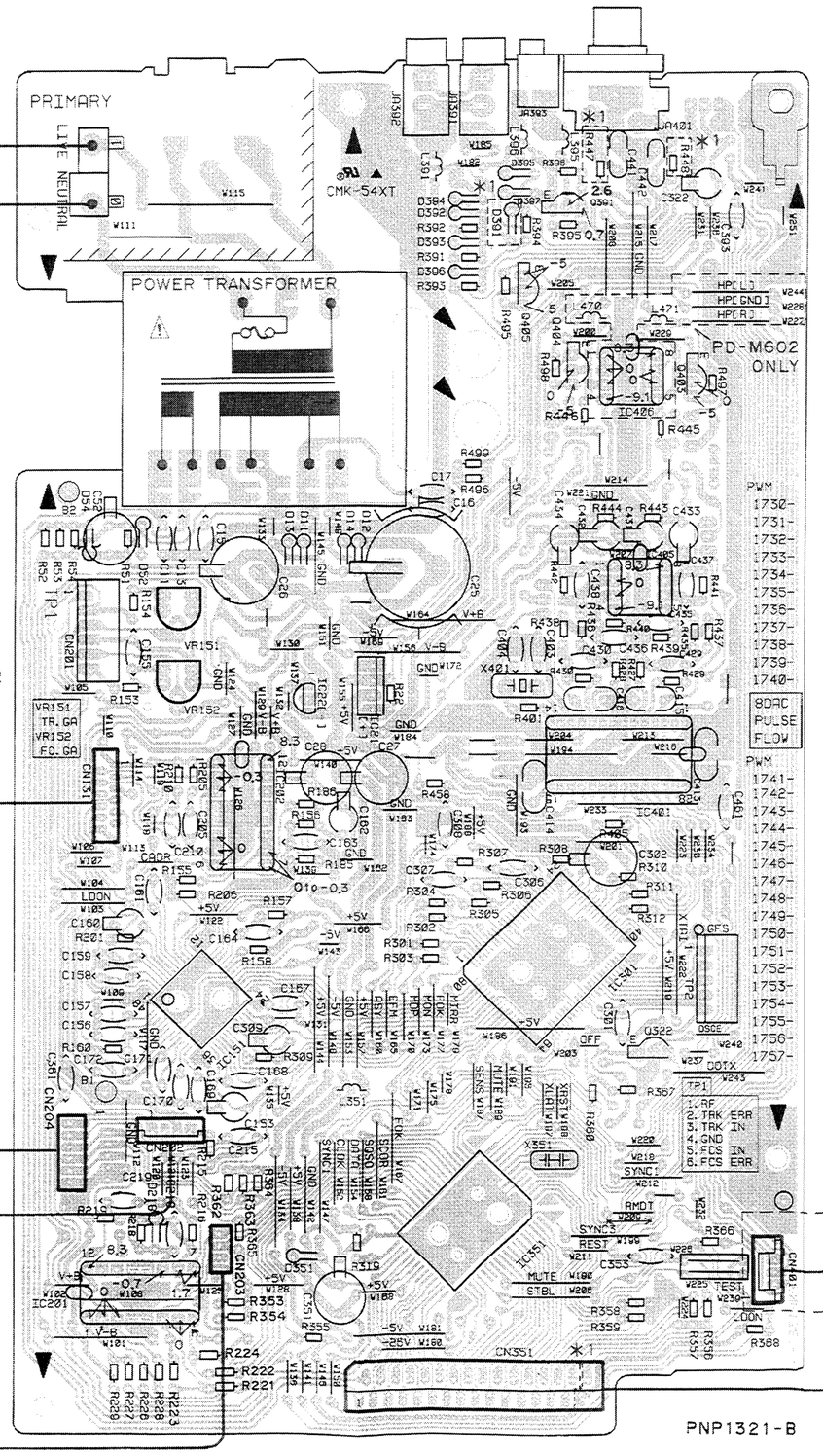
——— : Signal Route
(F) ——— : Focus Servo Loop Line
(L) ——— : Loading Motor Route
(T) - - - : Tracking Servo Loop Line
(S) ——— : Spindle Motor Route
(C) - - - : Carriage Motor Route
(D) - - - : Disc Select Motor Route

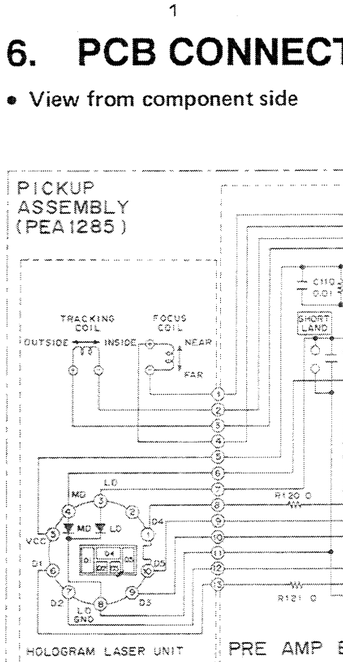
6. PCB CONNECTION DIAGRAM

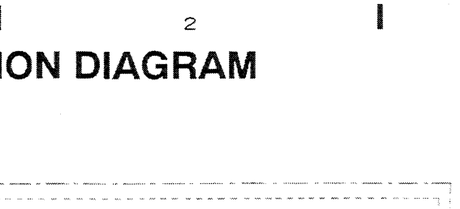
- View from component side

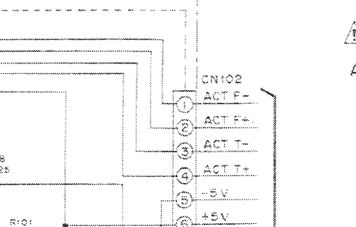


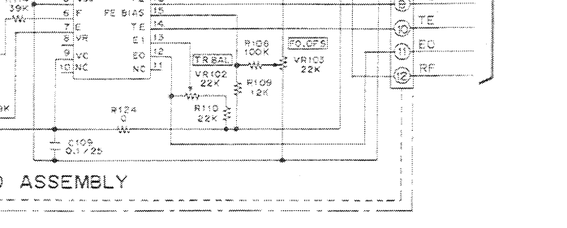




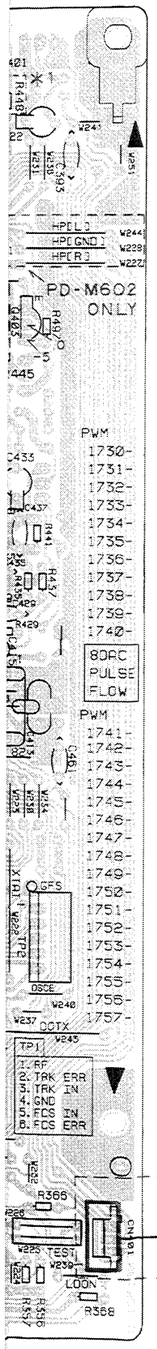






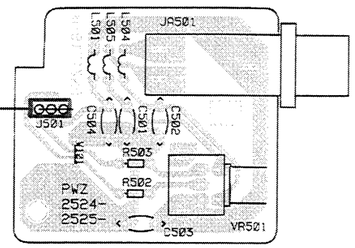


MOTHER BOARD ASSEMBLY
(PWM1746 : PD-M602)
(PWM1745 : PD-M552)
(PWM1741 : PD-M502)

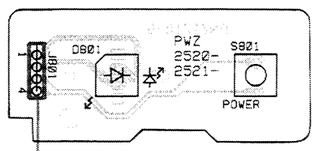


PD-M602 ONLY

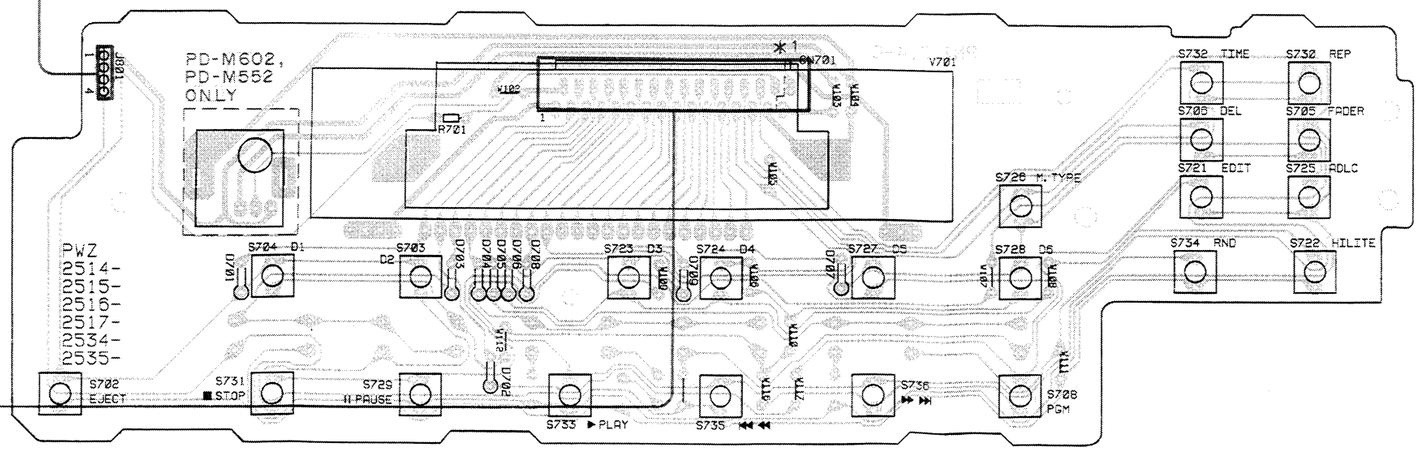
HEADPHONE BOARD ASSEMBLY



SWITCH BOARD ASSEMBLY



FUNCTION BOARD ASSEMBLY
(PWZ2516 : PD-M602, PD-M552)
(PWZ2514 : PD-M502)



PNP1323-C

IC151 (CXA1372Q)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0	25	5.0
2	0	26	0
3	0	27	5.0
4	0	28	0
5	−0.3	29	0
6	0	30	−5.0
7	0.2	31	2.5
8	0	32	2.5
9	0	33	5.0
10	5.0	34	−1.5
11	0	35	−1.7
12	0	36	5.0
13	0	37	−0.7
14	0 to 0.3	38	−1.6
15	0	39	0
16	−4.0	40	0.8
17	1.3	41	−5.0
18	0	42	0
19	−5.0	43	0
20	5.0	44	0
21	5.0	45	0
22	5.0	46	0
23	5.0	47	0
24	5.0	48	0

IC301 (CXD2500BQ)

Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	5.0	21	0	41	2.5	61	0
2	2.1	22	2.5	42	5.0	62	2.5
3	5.0	23	5.0	43	2.5	63	0
4	2.6	24	2.5	44	0	64	0
5	2.2	25	0.2	45	5.0	65	0
6	5.0	26	0	46	4.4	66	3.2 to 4.6
7	0	27	2.5	47	0	67	5.0
8	5.0	28	0	48	0	68	0
9	0	29	0	49	0 to 0.3	69	2.1 to 3.0
10	0	30	0	50	1.2	70	5.0
11	2.1	31	1.3 to 2.2	51	1.2	71	5.0
12	0	32	2.5	52	0	72	5.0
13	1.0	33	5.0	53	2.5	73	5.0
14	0.3 to 1.3	34	2.5	54	2.5	74	5.0
15	0	35	2.5	55	0	75	5.0
16	2.0	36	2.5	56	2.9	76	0
17	0	37	2.5	57	2.5	77	5.0
18	2.5	38	2.5	58	2.5	78	5.0
19	2.4	39	0	59	0	79	5.0
20	2.4	40	5.0	60	0	80	0

*1

	D391	R447	R448	CN351 CN701
PD-M602	USED	USED	USED	32P
PD-M552	USED	JUMPER	JUMPER	32P
PD-M502	NOT USE	JUMPER	JUMPER	30P

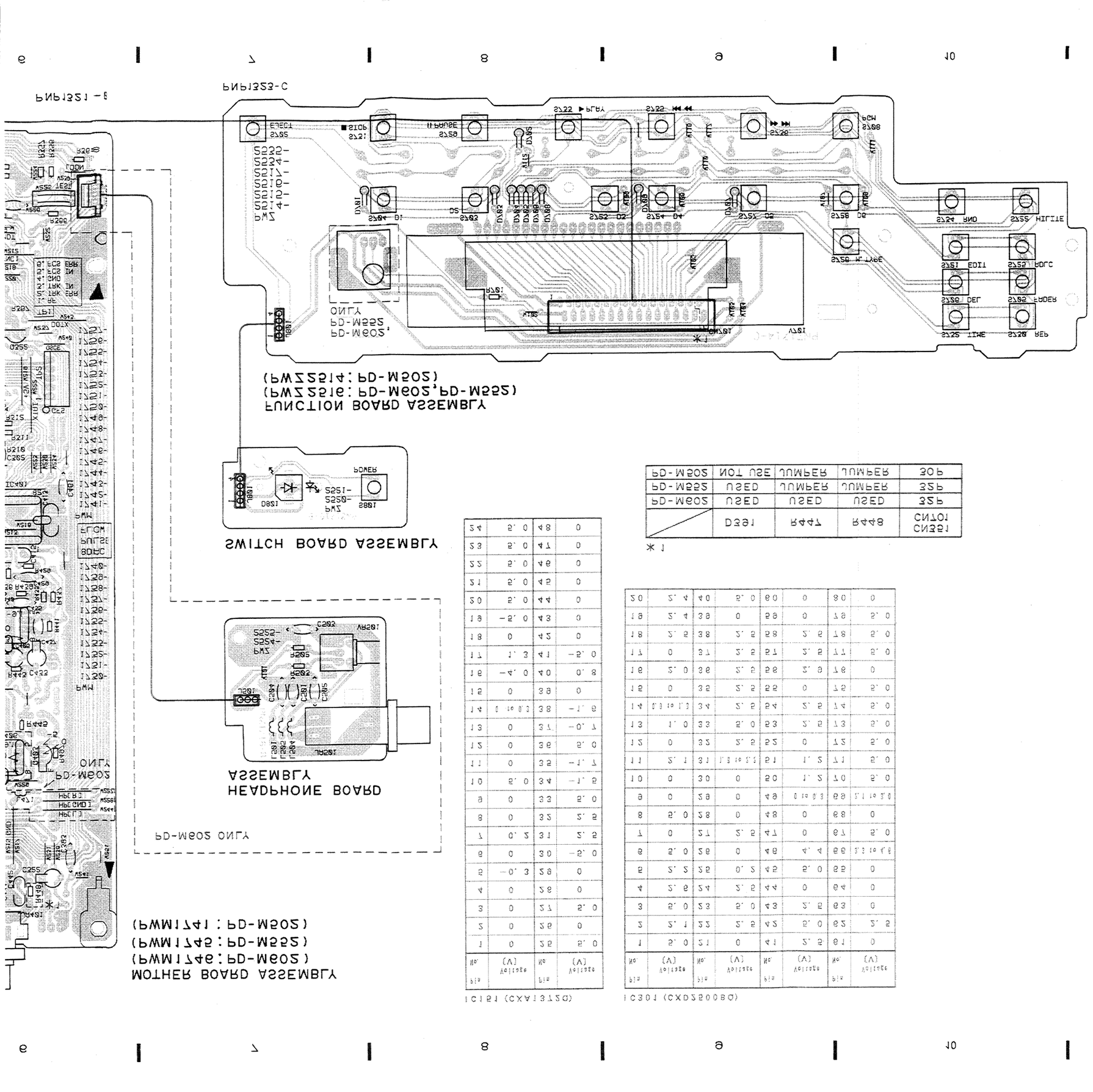
P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor			Ceramic capacitor
					Mylar capacitor
		FET			Styrol capacitor
		Diode			Electrolytic capacitor (Non polarized)
					Electrolytic capacitor (Noiseless)
		Zenner diode			Electrolytic capacitor (Polarized)
					Electrolytic capacitor (Polarized)
		LED			Power capacitor
		Varactor			Semi-fixed resistor
		Tact switch			Resistor array
		Inductor			Resistor
		Coil			Resonator
		Transformer			Thermistor
		Filter			

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with ○ shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.

IC351 (PD4458A)

Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	5.0	17	-3 to -22	33	5.0	49	0
2	−22.0	18	−26.0	34	3.5 to 4.1	50	5.0
3	−22.0	19	−5.0	35	5.0	51	0
4	−22.0	20	-3 to -22	36	0	52	5.0
5	−22.0	21	-3 to -22	37	5.0	53	5.0
6	−22.0	22	-3 to -22	38	5.0	54	5.0
7	−22.0	23	-3 to -22	39	0	55	0
8	−22.0	24	-3 to -22	40	0	56	2.5
9	−22.0	25	-3 to -22	41	0	57	2.5
10	−22.0	26	5.0	42	0	58	0
11	−25.0	27	-3 to -22	43	0	59	0
12	5.0	28	-3 to -22	44	0	60	5.0
13	5.0	29	-3 to -22	45	0	61	0
14	0	30	-3 to -22	46	0	62	0
15	0	31	5.0	47	0	63	0
16	-3 to -22	32	5.0	48	0	64	0

CD-M205, CD-M225, CD-M205



	DISP	RAPT	RAPB	CANCEL
CD-M205	USED	USED	USED	ASP
CD-M225	USED	JUMPER	JUMPER	ASP
CD-M205	NOT USE	JUMPER	JUMPER	SOP

*1

IC101 (CXA1315Q)

No.	Voltage	No.	Voltage
Pin	(V)	Pin	(V)
1	2.0	17	-3.0 to -11
2	0	18	-5.0
3	-11	19	-2.0
4	-11	20	0
5	-11	21	-3.0 to -11
6	-11	22	-3.0 to -11
7	-11	23	-3.0 to -11
8	-11	24	-3.0 to -11
9	-11	25	-3.0 to -11
10	-11	26	2.0
11	-11	27	-3.0 to -11
12	0	28	0
13	2.0	29	-3.0 to -11
14	0	30	-3.0 to -11
15	2.0	31	-3.0 to -11
16	2.0	32	2.0

IC201 (CXA1315Q)

No.	Voltage	No.	Voltage
Pin	(V)	Pin	(V)
1	2.0	17	2.0
2	0	18	2.0
3	2.0	19	0
4	0	20	0
5	2.0	21	2.0
6	0	22	2.0
7	2.0	23	2.0
8	0	24	2.0
9	0	25	2.0
10	0	26	2.0
11	2.0	27	2.0
12	0	28	2.0
13	2.0	29	2.0
14	0	30	-2.0
15	2.0	31	-2.0
16	0	32	-2.0

IC301 (CXD2500BQ)

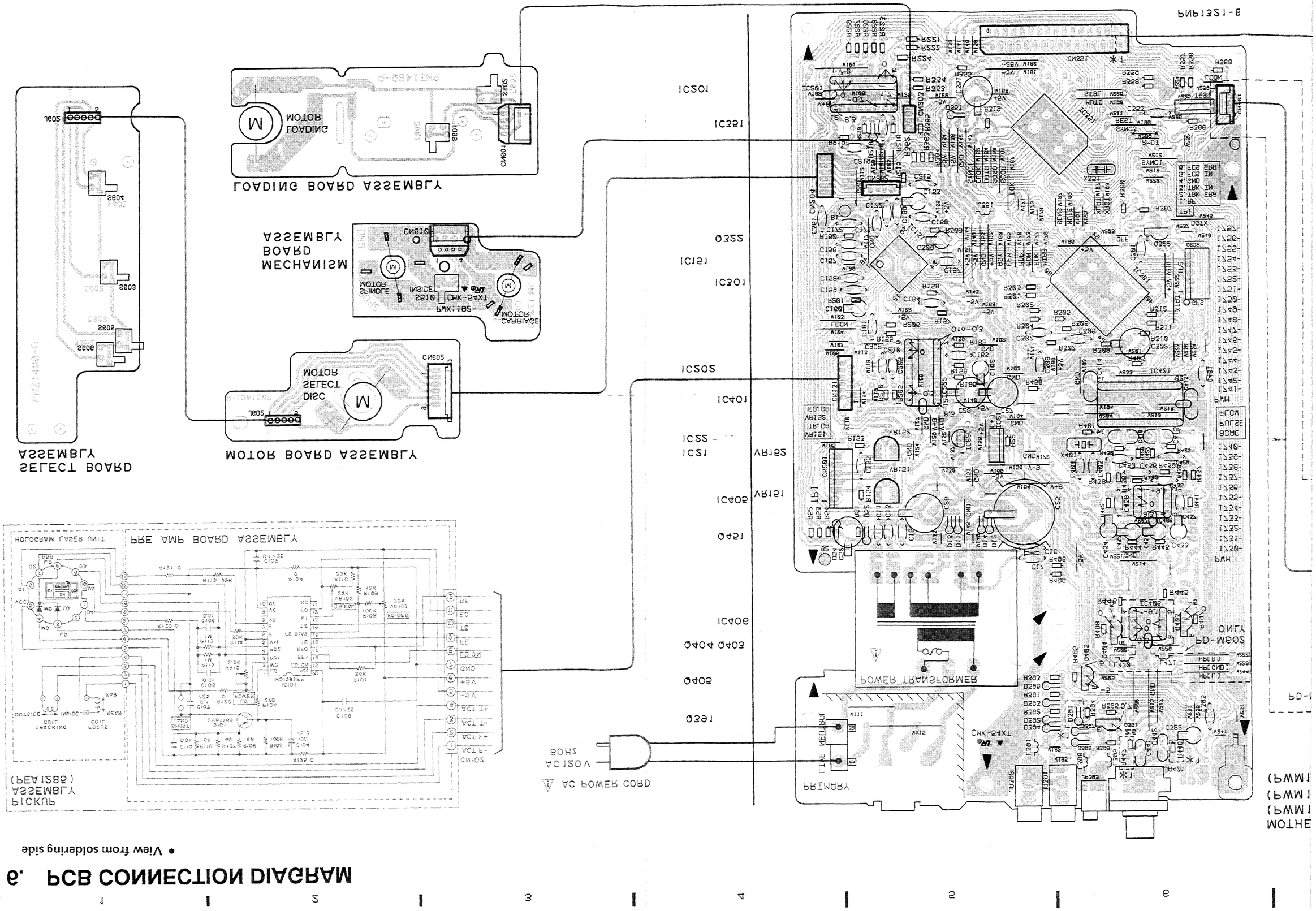
No.	Voltage	No.	Voltage	No.	Voltage	No.	Voltage
Pin	(V)	Pin	(V)	Pin	(V)	Pin	(V)
1	2.0	41	0	81	1.5	121	2.0
2	1.5	42	0.5	82	2.0	122	0
3	2.0	43	1.5	83	2.0	123	0
4	1.8	44	1.5	84	0	124	0
5	1.5	45	1.5	85	2.0	125	1.5
6	2.0	46	0	86	1.5	126	0
7	0	47	1.5	87	0	127	2.0
8	2.0	48	0	88	0	128	0
9	0	49	0 to 0.3	89	1.5 to 3.0	129	1.5 to 3.0
10	0	50	0	90	1.5	130	0
11	1.5 to 3.0	51	1.5 to 3.0	91	1.5	131	2.0
12	0	52	1.5	92	0	132	0
13	1.0	53	2.0	93	1.5	133	2.0
14	0.5 to 1.5	54	1.5	94	1.5	134	2.0
15	0	55	1.5	95	0	135	2.0
16	2.4	56	2.0	96	0	136	0
17	2.0	57	1.5	97	0	137	2.0
18	2.2	58	1.5	98	1.5	138	2.0
19	0	59	1.5	99	1.5	139	2.0
20	2.4	60	2.0	100	0	140	0

IC201 (CXA1315Q)

No.	Voltage	No.	Voltage
Pin	(V)	Pin	(V)
1	2.0	17	-3.0 to -11
2	-11	18	-5.0
3	-11	19	-2.0
4	-11	20	0
5	-11	21	-3.0 to -11
6	-11	22	-3.0 to -11
7	-11	23	-3.0 to -11
8	-11	24	-3.0 to -11
9	-11	25	-3.0 to -11
10	-11	26	2.0
11	-11	27	-3.0 to -11
12	0	28	0
13	2.0	29	-3.0 to -11
14	0	30	-3.0 to -11
15	2.0	31	-3.0 to -11
16	2.0	32	2.0

e. PCB CONNECTION DIAGRAM

• View from soldering side



7. PCB PARTS LIST

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560 Ω → 56 × 10^1 → 561 ····· RD1/8PM 5 6 1 J
47k Ω → 47 × 10^3 → 473 ····· RD1/4PS 4 7 3 J
0.5 Ω → 0R5 ····· RN2H 0 R 5 K
1 Ω → 010 ····· RS1P 0 1 0 K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω → 562 × 10^1 → 5621 ····· RN1/4PC 5 6 2 1 F

Mark	No.	Description	Part No.

LIST OF ASSEMBLY

		MOTHER BOARD ASSEMBLY	PWM1746
NSP		SUB BOARD ASSEMBLY	PWX1268
		├FUNCTION BOARD ASSEMBLY	PWZ2516
NSP		├SWITCH BOARD ASSEMBLY	PWZ2520
NSP		└HEADPHONE BOARD ASSEMBLY	PWZ2524
NSP		MECHANISM BOARD ASSEMBLY	PWX1192
NSP		LOADING BOARD ASSEMBLY	PWZ2038
NSP		MOTOR BOARD ASSEMBLY	PWZ2040
NSP		SELECT BOARD ASSEMBLY	PWZ2533

MOTHER BOARD ASSEMBLY

SEMICONDUCTORS

		IC406	BA15218
		IC151	CXA1372Q
		IC301	CXD2500BQ
⚠		IC201, IC202	LA6520
		IC405	NJM4565D-D
⚠		IC22	NJM79L05A
		IC401	PD2026B
		IC351	PD4458A
⚠		IC21	PQ05RR12
		Q391	2SC1740S
		Q403, Q404	2SD2144S
		Q322, Q405	DTC124ES
⚠		D11-D14, D52	11ES2
		D351, D391-D397	1SS254
		D54	MTZJ18B

COILS

		L391, L395, L396, L470, L471	LAU010K
		L351	LAU100K

CAPACITORS

		C403	CCCCH120J50
		C404	CCCCH220J50
		C429, C430, C435-C438	CCCCH390J50
		C393	CCCSL101J50
		C28, C153	CEAS101M10
		C52	CEAS101M35
		C26	CEAS102M16
		C431, C432	CEAS330M16
		C25	CEAS332M16
		C27, C302, C351	CEAS471M6R3
		C160, C162	CEAS4R7M50
		C309	CEASR47M50
		C413-C416	CFTYA104J50
		C157, C164, C169, C218, C308	CGCYX103K25
		C158, C159, C161, C163, C301	CGCYX104K25
		C156, C168	CGCYX333K25
		C307	CGCYX473K25
		C306	CKCYB152K50
		C155	CKCYB182K50
		C170	CKCYB332K50
		C171, C172	CKCYB472K50
		C11, C13, C15-C17, C167, C205, C210, C215, C219, C322, C353, C361, C461	CKCYF103Z50
		C433, C434 (C=220, V(AC)=25)	PCH1107
		C441, C442 (C=0.0015 μ, V(AC)=50V)	PCL1030

RESISTORS

		VR151, VR152 (R=22K, W=0.1)	RCP1046
		OTHER RESISTORS	RD1/6PM□□□J

OTHERS

		CN131 CONNECTOR (12P)	12FM-1.0BT
		CN351 CONNECTOR (32P)	HLEM32S-1
		JA401 PIN JACK (2P)	PKB1009
		JA391, JA392 REMOTE CONTROL JACK	PKN1004
		JA393 MINI JACK	PKN1005
		X401 CRYSTAL RESONATOR (16.9344MHz)	PSS1008
⚠		TERMINAL	RKC-061
		X351 CERAMIC RESONATOR (4.19MHz)	VSS1028

Mark	No.	Description	Part No.

FUNCTION BOARD ASSEMBLY

SEMICONDUCTORS

	D701, D702, D706-D709	1SS254

SWITCHES

	S702-S706, S708, S721-S736	PSG1006

RESISTORS

	ALL RESISTORS	RD1/6PM□□□J

OTHERS

	CN701 CONNECTOR(32P)	HLEM32R-1
	V701 FL INDICATOR TUBE	PEL1072
	REMOTE CONTROL SENSOR	SBX1610-51

SWITCH BOARD ASSEMBLY

SEMICONDUCTORS

	D801	PCX1019

SWITCHES

	S801	PSG1006

HEADPHONE BOARD ASSEMBLY

COILS

	L501, L504, L505	LAU010K

CAPACTORS

	C501, C502	CKCYF103Z50
	C503	CKCYF473Z50

RESISTORS

	VR501	PCS1003
	OTHER RESISTORS	RD1/6PM□□□J

OTHERS

	JA501 HEADPHONE JACK	RKN1002

MECHANISM BOARD ASSEMBLY

SWITCHES

	S610	DSG1016

LOADING BOARD ASSEMBLY

SWITCHES

	S601, S602	DSG1016

MOTOR BOARD ASSEMBLY

Motor board assembly has no service part.

SELECT BOARD ASSEMBLY

SWITCHES

	S604-S606	DSG1016
	S603	PSG1010

8. ADJUSTMENTS

8.1. Adjustment Methods

If a disc player is adjusted incorrectly or inadequately, it may malfunction or not work at all even though there is nothing at all wrong with the pickup or the circuitry. Adjust correctly following the adjustment procedure.

● Adjustment Items/Verification Items and Order

If the specified values cannot be obtained or no adjustment is possible by performing the verifications or adjustments described in steps 1 − 4, the pickup block may be defective.

Step	Item	Test Point	Adjustment Location
1	Focus offset verification	TP1, Pin 6 (FCS. ERR)	None
2	Tracking error balance verification	TP1, Pin 2 (TRK. ERR)	None
3	Pickup radial/tangential direction tilt adjustment	TP1, Pin 1 (RF)	Radial tilt adjustment screw, Tangential tilt adjustment screw
4	RF level verification	TP1, Pin 1 (RF)	None
5	Focus servo loop gain adjustment	TP1, Pin 5 (FCS. IN) TP1, Pin 6 (FCS. ERR)	VR152 (FCS. GAN)
6	Tracking servo loop gain adjustment	TP1, Pin 3 (TRK. IN) TP1, Pin 2 (TRK. ERR)	VR151 (TRK. GAN)

● **Abbreviation table**

FCS. ERR :Focus Error
TRK. ERR :Tracking Error
FCS GAN :Focus Gain
TRK GAN :Tracking Gain
FCS. IN :Focus In
TRK. IN :Tracking In

● Measuring Instruments and Tools

1. Dual trace oscilloscope (10:1 probe)
2. Low-frequency oscillator
3. Test disc (YEDS-7)
4. Low pass filter (39kΩ +0.001 μF)
5. Resistor (100 kΩ)
6. Standard tools

● Test Point and Adjustment Variable Resistor Positions

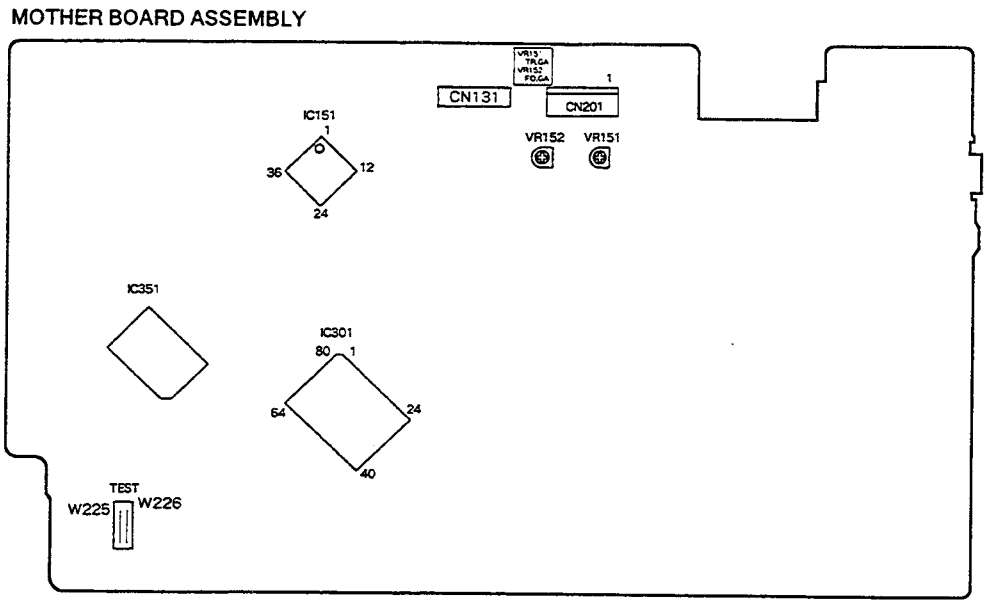


Figure 1. Adjustment Locations

● Notes

1. Use a 10:1 probe for the oscilloscope.
2. All the knob positions (settings) for the oscilloscope in the adjustment procedures are for when a 10:1 probe is used.

● Test Mode

These models have a test mode so that the adjustments and checks required for service can be carried out easily. When these models are in test mode, the keys on the front panel work differently from normal. Adjustments and checks can be carried out by operating these keys with the correct procedure. For these models, all adjustments are carried out in test mode.

[Setting these models to test mode]

How to set this model into test mode.

1. Unplug the power cord from the AC socket.
2. Short the test mode jumper wires. (See Figure 1.)
3. Plug the power cord back into the AC socket.

When the test mode is set correctly, the display is different from what it usually is when the power is turned on. If the display is still the same as usual, test mode has not been set correctly, so repeat Steps 1 – 3.

[Release from test mode]

Here is the procedure for releasing the test mode:

1. Press the STOP key and stop all operations.
2. Unplug the power cord from the AC socket.

[Operations of the keys in test mode]

Code	Key Name	Function in Test Mode	Explanation
	PGM (PROGRAM)	Focus servo close	The laser diode is lit up and the focus actuator is lifted up, then lowered slowly and the focus servo is closed at the point where the objective lens is focused on the disc. With the player in this state, if you lightly rotate the stopped disc by hand, you can hear the sound the focus servo. If you can hear this sound, the focus servo is operating correctly. If you press this key with no disc mounted, the laser diode lights up, the focus actuator is pulled up, then the actuator is lowered and raised three times and returned to its original position.
▷	PLAY	Spindle servo ON	Starts the spindle motor in the clockwise direction and when the disc rotation reaches the prescribed speed (about 500 rpm at the inner periphery), sets the spindle servo in a closed loop. Be careful. Pressing this key when there is no disc mounted makes the spindle motor run at the maximum speed. If the focus servo does not go correctly into a closed loop or the laser light shines on the mirror section at the outermost periphery of the disc, the same symptom is occurred.
▯▯	PAUSE	Tracking servo close/open	Pressing this key when the focus servo and spindle servo are operating correctly in closed loops puts the tracking servo into a closed loop, displays the track number being played back and the elapsed time on the front panel, and outputs the playback signal. If the elapsed time is not displayed or not counted correctly or the audio is not played back correctly, it may be that the laser is shining on the section with no sound recorded at the outer edge of the disc, that something is out of adjustment, or that there is some other problem. This key is a toggle key and open/close the tracking servo alternately. This key has no effect if no disc is mounted.

Code	Key Name	Function in Test Mode	Explanation
⏮ / ◁◁	TRACK / MANUAL SEARCH REV	Carriage reverse (inwards)	Moves the pickup position toward the inner diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation.
▷▷ / ⏭	TRACK / MANUAL SEARCH FWD	Carriage forward (outwards)	Moves the pickup position toward the outer diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation.
□	STOP	Stop	Initializes and the disc rotation stops. The pickup and disc remain where they are when this key is pressed.
⏏	EJECT	CD magazine eject	Stores Disc 1 in the CD magazine, then ejects the CD magazine. However, even though the CD magazine is ejected, the pickup does not return to the park position. Even if the CD magazine is mounted again, the pickup remains where it is.

Note : When inserting the magazine, disc 1 of the magazine is loaded automatically.

[How to play back a disc in test mode]

In test mode, since the servos operate independently, playing back a disc requires that you operate the keys in the correct order to close the servos.
Here is the key operation sequence for playing back a disc in test mode.

PGM(PROGRAM)	Lights up the laser diode and closes the focus servo.
⇩	
PLAY ▷	Starts the spindle motor and closes the spindle servo.
⇩	
PAUSE ▯▯	Closes the tracking servo.

Wait at least 2-3 seconds between each of these operations.

1. Focus Offset Verification

● Objective ● Symptom when out of adjustment	Verify the DC offset for the focus error amp. The model does not focus in and the RF signal is dirty.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 6 (FCS. ERR) [Settings] 5 mV/division 10 ms/division DC mode	● Player state ● Adjustment location ● Disc	Test mode, stopped (just the Power switch on) None None needed
[Procedure] Verify the DC voltage at TP1, Pin 6 (FCS. ERR) is 0 ± 50 mV.			

Note : If the specified values cannot be obtained or no adjustment is possible by performing the verifications or adjustments described in adjustment items 1 – 4, the pickup block may be defective.

2. Tracking Error Balance Verification

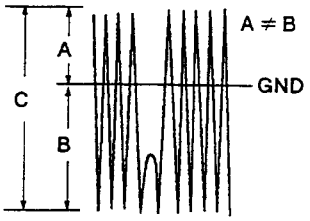
● Objective ● Symptom when out of adjustment	To verify that there is no variation in the sensitivity of the tracking photo diode. Play does not start or track search is impossible.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 2 (TRK. ERR). This connection may be via a low pass filter. [Settings] 50 mV/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Test mode, focus and spindle servos closed and tracking servo open None YEDS-7

[Procedure]

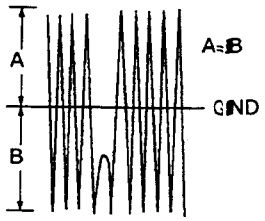
1. Move the pickup to midway across the disc (R=35 mm) with the TRACK/MANUAL SEARCH FWD ▷▷ · ▷▷| or REV |◁◁ · ◁◁ key.
2. Press the PGM (PROGRAM) key, then the PLAY ▷ key in that order to close the focus servo then the spindle servo.
3. Line up the bright line (ground) at the center of the oscilloscope screen and put the oscilloscope into DC mode.
4. Supposing that the positive amplitude of the tracking error signal at TP1, pin 2 (TRK ERR) is (A) and the negative amplitude is (B), the following expression is satisfied.

When $A \geqq B$, $\frac{A-B}{C} \times \frac{1}{2} \leqq 0.1$

When $A < B$, $\frac{B-A}{C} \times \frac{1}{2} \leqq 0.1$



When there is a DC component



When there is no DC component

3. Pickup Radial/Tangential Tilt Adjustment

● Objective	To adjust the angle of the pickup relative to the disc so that the laser beams are shone straight down into the disc for the best read out of the RF signals.		
● Symptom when out of adjustment	Sound broken;some discs can be played but not others.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 1 (RF). [Settings] 20 mV/division 200 ns/division AC mode	● Player state ● Adjustment location ● Disc	Test mode, play Pickup radial tilt adjustment screw and tangential tilt adjustment screw YEDS-7

[Procedure]

1. Press the TRACK/MANUAL SEARCH FWD ▷▷ • ▷▷| or REV |◁◁ • ◁◁ key to move the pickup to halfway across the disc (R=35mm).
   Press the PGM (PROGRAM) key, the PLAY ▷ key, then the PAUSE ▯▯ key in that order to close the respective servos and put the player into play mode.
2. First, adjust the radial tilt adjustment screw with a Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly.
3. Next, adjust the tangential tilt adjustment screw with a Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly (Figure 3).
4. Adjust the radial tilt adjustment screw and the tangential tilt adjustment screw again so that the eye pattern can be seen the most clearly. As necessary, adjust the two screws alternately so that the eye pattern can be seen the most clearly.
5. When the adjustment is completed, lock the radial and tangential adjustment screw.
   Note:Radial and tangential mean the directions relative to the disc shown in Figure 2.

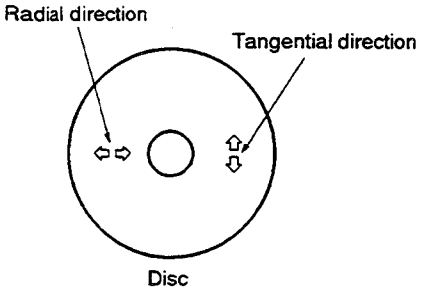
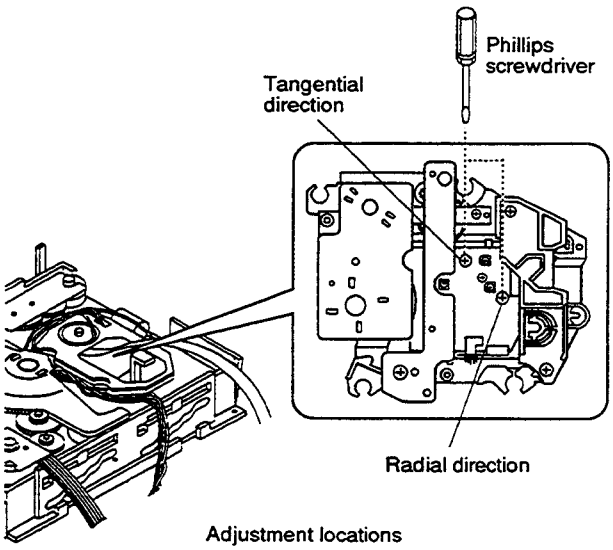


Figure 2



Adjustment locations

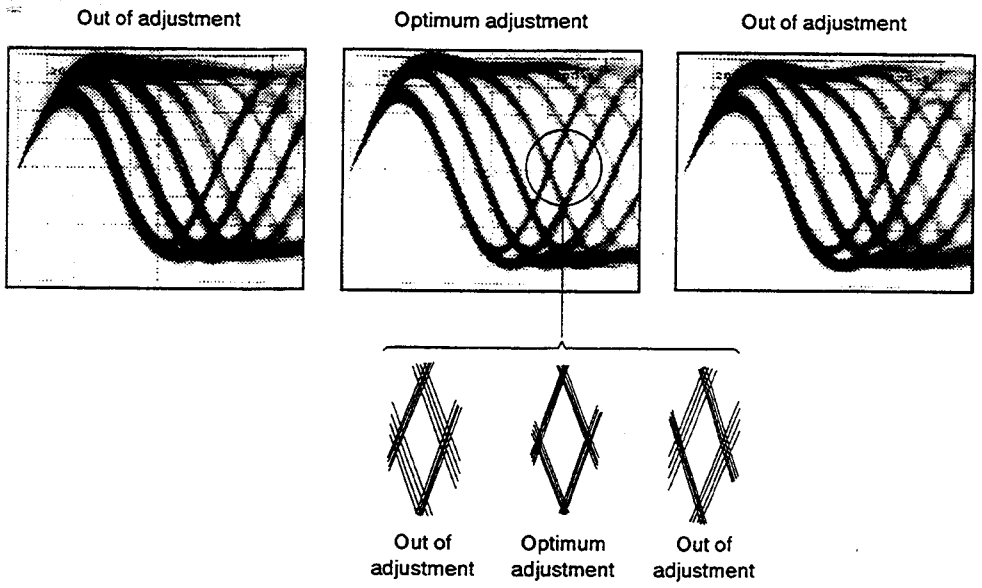


Figure 3. Eye pattern

4. RF Level Verification

● Objective	To verify the playback RF signal amplitude		
● Symptom when out of adjustment	No play or no search		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 1 (RF). [Settings] 50 mV/division 10 ms/division AC mode	● Player state ● Adjustment location ● Disc	Test mode, play None YEDS-7

[Procedure]

1. Move the pickup to midway across the disc (R=35 mm) with the TRACK/MANUAL SEARCH FWD ▷▷ · ▷▷| or REV |◁◁ · ◁◁ key, then press the PGM (PROGRAM) key, the PLAY ▷ key, then the PAUSE ▯▯ key in that order to close the respective servos and put the player into play mode.
2. Verify the RF signal amplitude is 1.2 Vp-p ± 0.2 V.

5. Focus Servo Loop Gain Adjustment

● Objective ● Symptom when out of adjustment	To optimize the focus servo loop gain. Playback does not start or focus actuator noisy.		
● Measurement instrument connections	See figure 4. [Settings] CH1 CH2 20 mV/division 5 mV/division X-Y mode	● Player state ● Adjustment location ● Disc	Test mode, play VR152 (FCS. GAN) YEDS-7

[Procedure]

1. Set the AF generator output to 1.2 kHz and 1 Vp-p.
2. Press the TRACK / MANUAL SEARCH FWD ▷▷ · ▷▷| or REV |◁◁ · ◁◁ key to move the pickup to halfway across the disc (R=35 mm), then press the PGM (PROGRAM) key, the PLAY ▷ key, then the PAUSE ▯▯ key in that order to close the corresponding servos and put the player into play mode.
3. Adjust VR152 (FCS. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

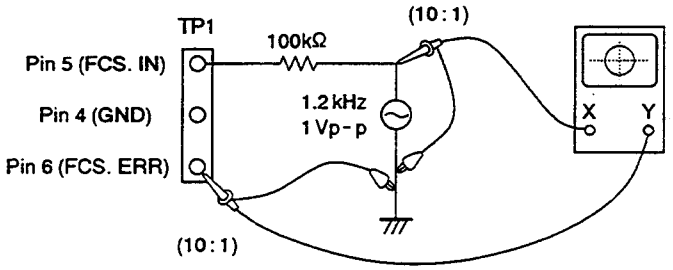
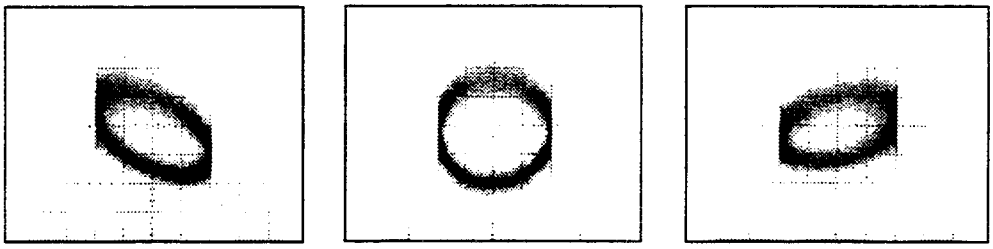


Figure 4

Focus Gain Adjustment



Higher gain | Optimum gain | Lower gain

6. Tracking Servo Loop Gain Adjustment

• Objective	To optimize the tracking servo loop gain.		
• Symptom when out of adjustment	Playback does not start, during searches the actuator is noisy, or tracks are skipped.		
• Measurement instrument connections	See Figure 5. [Settings] CH1 CH2 50 mV/division 20 mV/division X-Y mode	• Player state • Adjustment location • Disc	Test mode, play VR151 (TRK. GAN) YEDS-7

[Procedure]

1. Set the AF generator output to 1.2 kHz and 2 Vp-p.
2. Press the TRACK/MANUAL SEARCH FWD ▷▷ • ▷▷| or REV |◁◁ • ◁◁ key to move the pickup to halfway across the disc (R=35 mm), then press the PGM (PROGRAM) key, the PLAY ▷ key, then the PAUSE ▯▯ key in that order to close the corresponding servos and put the player into play mode.
3. Adjust VR151 (TRK. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

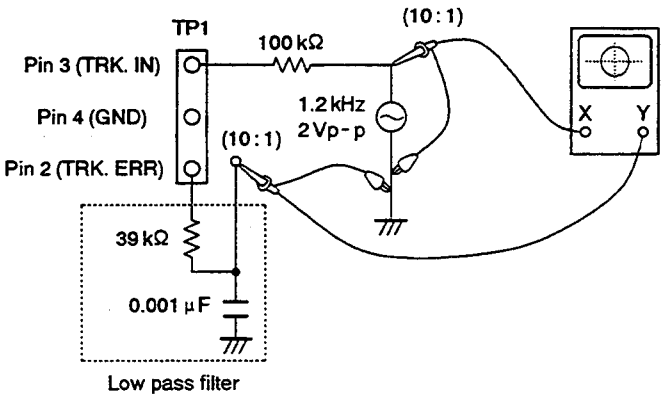
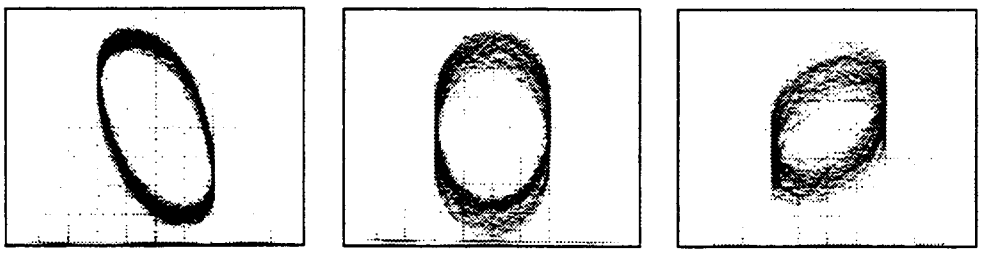


Figure 5

Tracking Gain Adjustment



Higher gain | Optimum gain | Lower gain

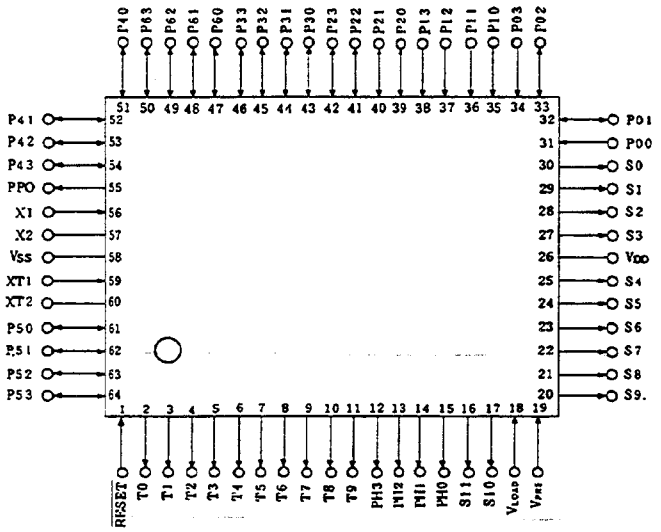
9. IC INFORMATION

- The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

■ PD4458A (IC351)

• System Control (Top view)

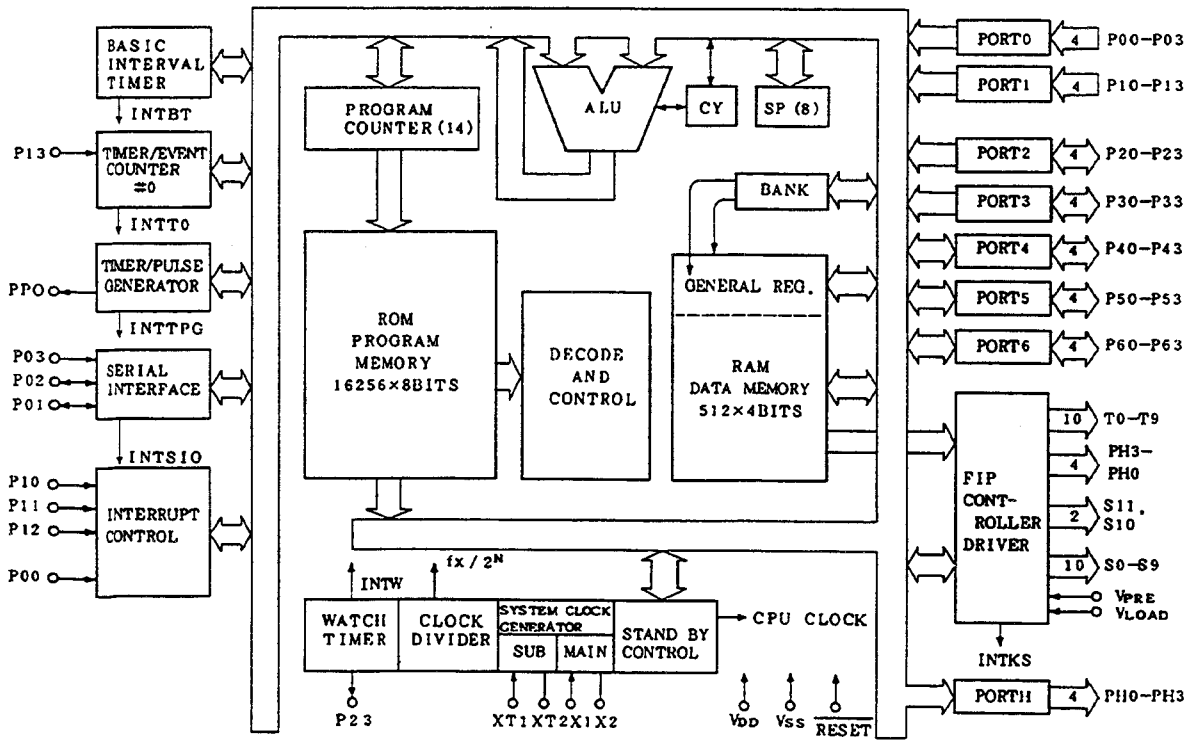
● Pin Arrangement



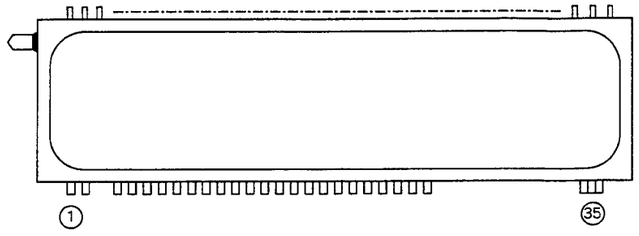
● Pin Function

No.	Pin Name	Function
1	$\overline{\text{RESET}}$	Reset input.
2-11	T0-T9	Digit output.
12-15	PH3-PH0	Port H.
16,17	S11,S10	Segment output.
18	VLOAD	Power supply terminal for FIP driver.
19	VPRE	Power supply terminal for FIP driver.
20-25	S9-S4	Segment output.
26	VDD	+ Power supply terminal.
27-30	S3-S0	Segment output.
31-34	P00-P03	Port 0.
35-38	P10-P13	Port 1.
39-42	P20-P23	Port 2.
43-46	P30-P33	Port 3.
47-50	P60-P63	Port 6.
51-54	P40-P43	Port 4.
55	PPO	Pulse output.
56,57	X1,X2	Clock oscillation terminal of Main system.
58	Vss	Ground
59,60	XT1,XT2	Clock oscillation terminal of Sub system.
61-64	P50-P53	Port 5.

● Block Diagram



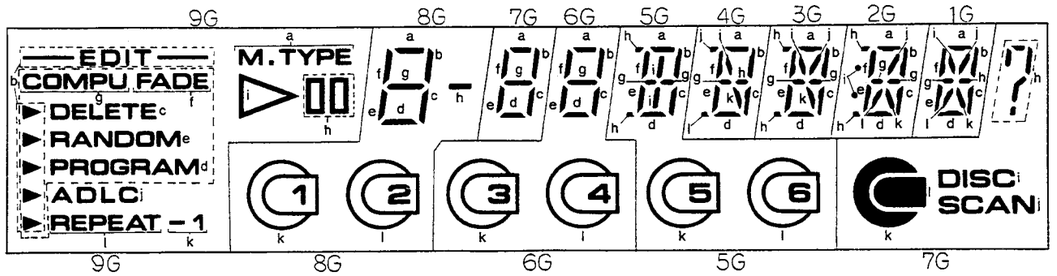
■ PEL1072 (V701)



PIN CONNECTION

TERMINAL NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
ELECTRODE	F1	F1	NP	P (e)	P (f)	P (g)	P (h)	P (a)	P (b)	P (c)	P (d)	P (i)	P (j)	P (k)	P (l)	NC	9G	8G		
TERMINAL NO.				19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
ELECTRODE				7G	6G	5G	4G	3G	2G	1G	NP	NP	NP	NP	NP	NP	NP	NP	F2	F2

Notes F: Filament NP: No Pin
G: Grid NC: No Connection
P: Anode



10. FOR PD-M602/KUXJ, KUXJS, KC, KCXJ, PD-M552/KU, KUXJ, KUXJS, PD-M502/KU, KUXJ, KUXJS, KC AND KCXJ TYPES

CONTRAST OF MISCELLANEOUS PARTS

NOTES:
- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

PD-M602/KUXJ, KUXJS, KC, KCXJ, PD-M552/KU, KUXJ, KUXJS, PD-M502/KU, KUXJ, KUXJS, KC, KCXJ and PD-M602/KU have the same construction except for the following:

Mark	Symbol & Description	Part No.													Remarks
		PD-M602/ KU type	PD-M602/ KUXJ type	PD-M602/ KUXJS type	PD-M602/ KC type	PD-M602/ KCXJ type	PD-M552/ KU type	PD-M552/ KUXJ type	PD-M552/ KUXJS type	PD-M502/ KU type	PD-M502/ KUXJ type	PD-M502/ KUXJS type	PD-M502/ KC type	PD-M502/ KCXJ type	
	Mother board assembly	PWM1746	PWM1746	PWM1746	PWM1746	PWM1746	PWM1745	PWM1745	PWM1745	PWM1741	PWM1741	PWM1741	PWM1741	PWM1741	
NSP	Sub board assembly	PWX1268	PWX1268	PWX1268	PWX1268	PWX1268	PWX1267	PWX1267	PWX1267	PWX1265	PWX1265	PWX1265	PWX1265	PWX1265	
	Function board assembly	PWZ2516	PWZ2516	PWZ2516	PWZ2516	PWZ2516	PWZ2516	PWZ2516	PWZ2516	PWZ2514	PWZ2514	PWZ2514	PWZ2514	PWZ2514	
NSP	Headphone board assembly	PWZ2524	PWZ2524	PWZ2524	PWZ2524	PWZ2524	.....	.....	.....	.....	.....	.....	.....	.....	
⚠	Power cord with plug	PDG1015	PDG1015	PDG1015	RDG1010	RDG1010	PDG1015	PDG1015	PDG1015	PDG1015	PDG1015	PDG1015	RDG1010	RDG1010	
⚠	Strain relief	CM – 22C	CM – 22C	CM – 22C	CM – 22	CM – 22	CM – 22C	CM – 22C	CM – 22C	CM – 22C	CM – 22C	CM – 22C	CM – 22	CM – 22	
	32P F.F.C/30V (J701)	PDD1125	PDD1125	PDD1125	PDD1125	PDD1125	PDD1125	PDD1125	PDD1125	.....	.....	.....	.....	.....	
	30P F.F.C/30V (J701)	.....	.....	.....	.....	.....	.....	.....	.....	PDD1126	PDD1126	PDD1126	PDD1126	PDD1126	
	Remote control unit	PWW1068	PWW1068	PWW1068	PWW1068	PWW1068	PWW1068	PWW1068	PWW1068	.....	.....	.....	.....	.....	
	Battery cover	PZN1010	PZN1010	PZN1010	PZN1010	PZN1010	PZN1010	PZN1010	PZN1010	.....	.....	.....	.....	.....	
NSP	Battery (R03 AAA)	VEM – 022	VEM – 022	VEM – 022	VEM – 022	VEM – 022	VEM – 022	VEM – 022	VEM – 022	.....	.....	.....	.....	.....	
	Function panel assembly	PEA1265	PEA1265	PEA1265	PEA1265	PEA1265	PEA1274	PEA1274	PEA1274	PEA1264	PEA1264	PEA1264	PEA1264	PEA1264	
	Function panel	PNW2250	PNW2250	PNW2250	PNW2250	PNW2250	PNW2275	PNW2275	PNW2275	PNW2249	PNW2249	PNW2249	PNW2249	PNW2249	
	Function button	PAC1717	PAC1717	PAC1717	PAC1717	PAC1717	PAC1716	PAC1716	PAC1716	PAC1716	PAC1716	PAC1716	PAC1716	PAC1716	
	Knob (Headphone)	PAC1707	PAC1707	PAC1707	PAC1707	PAC1707	.....	.....	.....	.....	.....	.....	.....	.....	
	Display window	PAM1607	PAM1607	PAM1607	PAM1607	PAM1607	PAM1601	PAM1601	PAM1601	PAM1600	PAM1600	PAM1600	PAM1600	PAM1600	
NSP	Rear base	PNA1915	PNA1941	PNA2008	PNA1940	PNA1942	PNA1938	PNA1939	PNA2011	PNA1914	PNA1935	PNA2007	PNA1932	PNA1936	
	Insulator	PNW1912	PNW1912	PNW1912	PNW1912	PNW1912	PNW1912	PNW1912	PNW1912	.....	.....	.....	.....	.....	
	Leg assembly	.....	.....	.....	.....	.....	.....	.....	.....	PEA1293	.....	.....	PEA1293	.....	*1
NSP	Leg	.....	.....	.....	.....	.....	.....	.....	.....	PNW1323	.....	.....	PNW1323	.....	*1
	Stopper	.....	.....	.....	.....	.....	.....	.....	.....	PNM1070	.....	.....	PNM1070	.....	*1
	Insulator assembly	.....	.....	.....	.....	.....	.....	.....	.....	.....	DXA1490	DXA1490	.....	DXA1490	
	CD packing case	PHG1869	PHG1917	PHG1944	PHG1924	PHG1918	PHG1884	PHG1916	PHG1947	PHG1868	PHG1913	PHG1943	PHG1922	PHG1914	
	Operating instructions (French)	.....	.....	.....	PRC1053	PRC1053	.....	.....	.....	.....	.....	.....	PRC1053	PRC1053	

Note *1 : Refer to page 6.

MOTHER BOARD ASSEMBLY

PWM1745, PWM1741 and PWM1746 have the same construction except for the following:

Mark	Symbol & Description	Part No.			Remarks
		PWM1746	PWM1745	PWM1741	
	IC405	NJM4565D – D	NJM4558D – D	NJM4558D – D	
	IC406	BA15218	.....	.....	
	D391	1SS254	1SS254	.....	
	C433, C434 (22/25V)	PCH1107	.....	.....	
	C433, C434	.....	CEAS220M25	CEAS220M25	
	R445, R446	RD1/6PM471J	RD1/6PM102J	RD1/6PM102J	
	R447, R448	RD1/6PM471J	.....	.....	
	L470, L471	LAU010K	.....	.....	
	CN351 (32P FFC connector)	HLEM32S – 1	HLEM32S – 1	.....	
	CN351 (30P FFC connector)	.....	.....	HLEM30S – 1	
NSP	CN401	52147 – 0310	.....	.....	

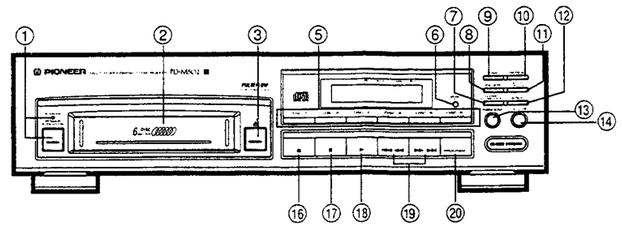
FUNCTION BOARD ASSEMBLY

PWZ2514 and PWZ2516 have the same construction except for the following:

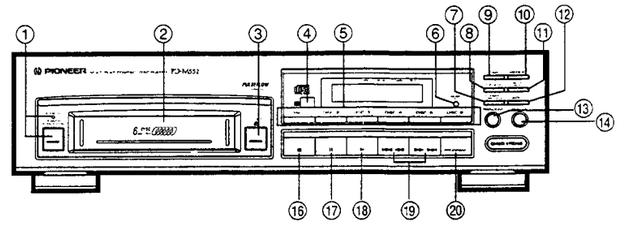
Mark	Symbol & Description	Part No.		Remarks
		PWZ2516	PWZ2514	
	CN701 (32P FFC connector)	HLEM32R – 1	.....	
	CN701 (30P FFC connector)	.....	HLEM30R – 1	
	Remote sensor	SBX1610 – 51	.....	

11. PANEL FACILITIES

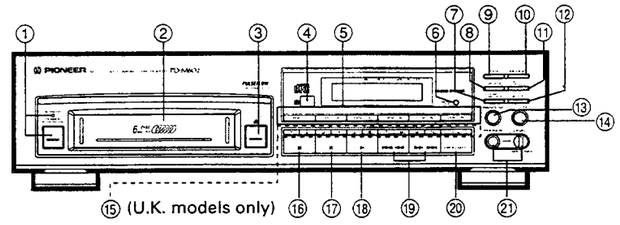
PD-M502



PD-M552



PD-M602



① **POWER STANDBY/ON switch and STANDBY indicator**
② **Magazine insertion slot**
③ **EJECT button (⏏)**
④ **Remote sensor (Except for PD-M502)**
Receives the signal from the remote control unit.
• The PD-M502 is not equipped with the remote sensor.
⑤ **Disc number buttons (DISC 1~DISC 6)**
⑥ **MUSIC TYPE button**
⑦ **COMPU/TIME FADE button**
⑧ **DELETE button**
⑨ **TIME button**
⑩ **REPEAT button**
⑪ **AUTO FADER button**
⑫ **ADLC (Automatic Digital Level Controller) button**
⑬ **RANDOM play button**
⑭ **HI-LITE scan button**
⑮ **Digit buttons (1~10, >10) (PD-M602 [U.K. model] only)**
⑯ **Stop button (■)**
⑰ **Pause button (❚❚)**
⑱ **Play button (►)**
⑲ **Track/Manual search buttons (|◄◄ ◄◄/►► ►►|)**
⑳ **PROGRAM button**
㉑ **Headphones jack (PHONES) and headphones volume control (PHONES LEVEL) (PD-M602 only)**

12. SPECIFICATIONS

General

Type .....Compact disc digital audio system
Power requirements
U.K. and Australian models .....AC 220-240 V, 50/60 Hz
U.S. and Canadian models .....AC 120 V, 60 Hz
Other models .....AC 110-127 V/220-240 V (switchable), 50/60 Hz
Power consumption
U.K., Australian and other models .....13 W
U.S. and Canadian models .....12 W
Operating temperature .....+5°C~+35°C (+41°F~+95°F)
Weight .....3.8 kg (8 lb, 6 oz)
External dimensions .....420 (W) x 299 (D) x 105 (H) mm 16-9/16 (W) x 11-12/16 (D) x 4-1/8 (H) in

Audio section

Frequency response .....2 Hz-20 kHz
S/N ratio
PD-M602(U.K. model) .....102 dB or more (EIAJ)
Other models .....98 dB or more (EIAJ)
Dynamic range .....96 dB or more (EIAJ)
Harmonic distortion .....0.003% or less (EIAJ)
Output voltage .....2.0 V
Wow and flutter .....Limit of mesurement (±0.001% W. PEAK) or less (EIAJ)
Channels .....2-channel (stereo)

Output terminal

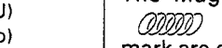
Audio line output
Headphone jack with volume control (PD-M602 only)
Control input/output jacks (PD-M502/PD-M552: all models, PD-M602: U.S. and Canadian models only)
CD-DECK SYNCHRO jack

Accessories

- Remote control unit (Except for PD-M502) 1
- Size AAA/R03/dry batteries (Except for PD-M502) 2
- Six-compact-disc magazine 1
- Control cord (PD-M502/PD-M552: all models, PD-M602 : U.S. and Canadian models only) 1
- Output cord 1
- Operating instructions 1

NOTE:

Specifications and design subject to possible modification without notice, due to improvements.

The Magazine Type Multi-Play CD Players with  mark and the Magazines with the same mark are compatible for 5-inch (12 cm) discs.